MCWP 3-24

Assault Support

U.S. Marine Corps

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FOREWORD

Marine Corps Warfighting Publication (MCWP) 3-24, *Assault Support*, provides a framework for the development and employment of assault support assets in peace, crisis, or war. While this publication covers all aspects of assault support, it focuses on the employment of vertical lift support for Marine air-ground task force (MAGTF) operations. The doctrine applies across the full range of military operations—from humanitarian assistance to general war.

Assault support doctrine is based on a common understanding of the nature of war and on our warfighting philosophy as described in Marine Corps Doctrinal Publication (MCDP) 1, *Warfighting*. This doctrine provides for fast, flexible, and decisive action in a complex environment characterized by friction, uncertainty, fluidity, and rapid change. It also recognizes that equipment is but a means to an end and thus is independent of any particular technology.

This publication is for commanders and their staffs as a guide to plan assault support missions. It forms the basis for specific tactics, techniques, and procedures found in subordinate Marine Corps doctrinal publications, assault support aircraft Naval Air Training and Operating Procedures Standardization (NATOPS) manuals, and tactical manuals within the naval warfare publication (NWP) 3-22.5 series.

This publication supersedes Fleet Marine Force Manual (FMFM) 5-30, *Assault Support*, dated 24 June 1994.

Reviewed and approved this date.

BY DIRECTION OF THE COMMANDANT OF THE MARINE CORPS

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Assault Support

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Historical Perspective

The Beginnings

The earliest use of Marine aircraft logistics support is traceable to the 1920's "Banana Wars." In 1928, First Lieutenant Christian F. Schilt evacuated wounded Marines by air from Quilali, Nicaragua. His feat introduced medical evacuation and earned him the Medal of Honor. By the 1930's, Marine aircraft was used to move high priority cargo and personnel. During World War II, as operations in the Pacific theater were expanding, the importance of rapid transport became apparent. Intratheater air movement of personnel, equipment, and cargo became commonplace. During one critical phase on Guadalcanal when aviation gasoline was scarce, air operations were maintained by air resupply alone for several days. Marine air transport flew personnel and critical materials from the United States to Fleet Marine Force units throughout the Pacific Ocean. Marine transport aircraft had proven themselves as logistic support vehicles, but their use as tactical transport vehicles had not yet been fully explored.

The Advent of Helicopters

In the early 1930's the Marine Corps evaluated the Pitcairn OP-1 autogyro. Field tested in Nicaragua during 1932, the four-bladed, stubby-winged aircraft was found suitable for liaison purposes and medical evacuation of the wounded. Considered unsafe when carrying loads in excess of 200 pounds, the OP-1 soon disappeared from active Marine Corps inventory. In 1935, the Marine Corps tested the Kellett OP-2, a wingless autogyro similar to the OP-1, and found its small payload to be equally unsatisfactory.

Although the autogyro contributed significantly to rotary-wing development, it was not until 1939 that Igor I. Sikorsky, a Russian-born aircraft designer, successfully test-flew the first practical helicopter in the western hemisphere. While Sikorsky was the first designer to build a practical helicopter, other designers soon followed. In 1942, the Bell Helicopter Corporation appeared. An established fixed-wing aircraft builder, Bell experimented with helicopter technology. In 1943, Frank N. Piasecki, a Pennsylvania engineer, founded the P-V Engineering Forum (Piasecki later became Boeing Vertol). These three manufacturers, Sikorsky, Piasecki (Boeing), and Bell directly influenced the early development of Marine Corps helicopter design and procurement. Today, these companies continue to dominate the development of Navy and Marine Corps helicopter programs.

In 1946 after the Bikini Atoll nuclear tests in the Pacific Ocean, Lieutenant General Roy S. Geiger reported that future landing forces would have to move with a greater degree of surprise and speed than had been visualized. During these atomic tests, an entire fleet of U.S., Japanese, and German warships was destroyed. LtGen Geiger realized that the atomic bomb's mass destructive capability and the vulnerability of a concentrated amphibious task force made dispersion a necessity. To sufficiently disperse the fleet and the landing force but still mass combat forces at the desired place and time, a new mode of assault transportation was needed.

The goal was to gain relative close contact with the enemy to lessen the likelihood of a nuclear attack. The theory behind this concept suggested that the enemy is less liable to risk their own forces in order to destroy their adversary. The problem was how to devise a means of rapid troop concentration from greatly increased dispersal distances that coincided with fleet cruising dispositions in the atomic age. After reading LtGen Geiger's report, Gen Vandergrift, Commandant of the Marine Corps (CMC), established a Special

Board to address the issue. Within the Special Board, a three member Quantico-based committee considered a variety of means to achieve a rapid buildup of assault forces including transport aircraft, gliders, parachutists, troop and cargo-carrying submarines, and also large assault transport seaplanes—a sort of "flying landing ship tank."

The committee also considered helicopters which, appearing to be superior in characteristics to all other assault vehicles, overcame the effects of dispersion while reducing exposure of the amphibious task force. The committee knew that the helicopter's low speed and perceived vulnerability was disappointing and that no helicopter with the capabilities they required yet existed. However, the relative primitive state of helicopter technology did not deter their enthusiasm.

On 16 December 1946, the Special Board submitted an advanced report to CMC recommending parallel programs to develop a transport seaplane and a transport helicopter. An experimental Marine helicopter squadron was also recommended to develop tactics, techniques, and procedures (TTP). Finally, the report recommended that the Marine Corps Schools at Quantico draft a tentative doctrine for helicopter employment.

The Helicopterborne Operations Concept

On 19 December 1946, CMC endorsed the first known service document to propose helicopter use as a tactical vehicle for the transport of combat troops from a naval vessel to a landing area ashore.

Carrier-based transport helicopters offered all the advantages of the conventional airborne operation but few of the disadvantages. They could be operated from aircraft carriers, with cover and preparatory fires on landing areas provided by aircraft from the same ships. With a relatively unlimited choice of landing areas, troops could land in combat formations and under full control of the flanks or rear of a hostile position. It should be noted also that transport helicopters offer a means for rapid evacuation of casualties, movement of supplies directly from ship to dump, and for subsequent movement of troops and supplies in continuing operations ashore. Subsequently, Marine Helicopter Squadron 1 (HMX-1), commissioned on 1 December 1947, marked the official beginning of Marine Corps rotary-wing aviation.

The Korean War

The North Koreans invaded South Korea before dawn on 25 June 1950. On 21 July 1950, Gen Wallace sent a memorandum to the chief of naval operation's (CNO's) Air Readiness Division requesting that necessary steps be taken to immediately procure 40 (interim) transport helicopters, preferably of the Sikorsky HO4S-1 type. The CNO instructed the Bureau of Aeronautics to procure two 15 plane squadrons in 6 months from contractor notification. The HO4S-1, renamed the HRS-1, would make history in Korea during 1951.

The First Provisional Brigade was formed on 7 July 1950, at Camp Pendleton, California. The organization was composed of a reinforced infantry regiment and Marine Aircraft Group (MAG) 33. The air component contained three fighter squadrons and one observation squadron. Marine Observation Squadron Six, or VMO-6, was equipped with four helicopters and was the first unit to employ helicopters in combat.

The VMO-6 squadron mission had been officially described in 1949 as the conduct of "tactical air reconnaissance, artillery spotting, and other flight operations within the capabilities of assigned aircraft in support of ground units." In the early months of the Korean war, VMO-6 achieved its potential to the fullest.

During the counterattack to regain the initiative in early August 1950, VMO-6 would conduct helicopter missions in command and control, water resupply, the first Marine medical evacuations

(MEDEVAC), artillery spotting, the first Marine rescue of a downed pilot, combat wire laying, and the first night MEDEVAC by helicopter.

In addition, the first Marine transport helicopter squadron, Marine Transport Helicopter Squadron 161 (HMR-161) was formed at El Toro, California on 15 January 1951 and was equipped with the Sikorsky HRS-1. Deploying to Korea in August 1951, HMR-161 became involved in combat operations. It conducted numerous medical evacuations; external lifts of multiple rocket launchers, 75mm pack howitzers, and ammunition; troop lifts; and resupply missions.

Tactics employed during the Korean war had been previously developed and validated by HMX-1 in Quantico. The successful combat record of HMR-161 and the rapid movement of troops and supplies by helicopter were positive proof that the helicopter was transportation with tremendous potential. A new term had been coined to describe the rapid movement of troops by helicopter: vertical envelopment. The maneuver emphasized the ability to overcome obstacles and attack the enemy's vulnerable flank. In spite of its flaws, the helicopter proved itself a valuable tactical innovation during the Korean war.

Post-Korea

In the years between the Korean war and the Vietnam war, the Marine Corps continued to refine assault support TTP. CMC wanted to transport a division and a half of Marines during amphibious operations via helicopters. Planners wrestled with the problem of coming up with the right type of helicopters and number of squadrons to realize that vision.

Along with helicopter development, the Marine Corps pushed for development of amphibious shipping designed for helicopter operations. Force reductions caused some shifting of priorities in 1958 and 1959, but assault support cemented itself in the way the Marine Corps would fight battles and win wars.

In the early 1960's, the Marine Corps received the KC-130 aerial refueling and transport aircraft, adding another dimension to Marine assault support aviation. In 1962, use of the KC-130s as airborne refuelers allowed an F-8 fighter squadron to cross the Pacific Ocean nonstop.

The Vietnam War

The Vietnam war is sometimes referred to as the "helicopter war." The first helicopter unit deployed to Southeast Asia was HMM-362, flying the UH-34D, to the airfield at Soc Trang on the Mekong Delta in April 1962. Helicopter use rapidly expanded. The UH-34 was replaced by the CH-46 and the CH-53 in I Corps. This vast increase in available lift was soon exploited. By 1970, Marine helicopter squadrons were lifting 70,000 passengers and 6,000 tons of cargo each month.

At the end of the U.S. involvement in Vietnam, Operation Frequent Wind was executed to evacuate U.S. citizens out of the country in the face of communist forces. Evacuation of Saigon was completed using helicopters to move personnel and equipment from the city to amphibious shipping off the coast.

Post-Vietnam

In the years since the Vietnam war, changes in assault support doctrine have been instituted and refined. Threat systems like the SA-7 Grail and other infrared guided surface-to-air missiles (SAMs) forced changes in doctrine. Greater emphasis was placed on night operations using night vision devices (NVDs), and more precise navigation systems were developed for flight during night and adverse weather.

Operations were not limited to developing new TTP's however. On 24 October 1983, the island nation of Grenada in the Caribbean was in the throes of a coup. In an effort to safeguard American lives, the United States executed Operation

Urgent Fury. From 24 October to 28 October the 22nd Marine Amphibious Unit (MAU) conducted helicopterborne assaults, flew resupply missions, and safely evacuated over 200 U.S. citizens to successfully complete the operation.

Extensive peacekeeping operations in Beirut, Lebanon, and an unsuccessful coup attempt by President Corizon Aquino's opponents are examples of where assault support operations were conducted. Numerous missions were flown to reinforce the embassy in Manila and to bolster security at key communications sites on Luzon.

The Gulf War

Assault support was employed extensively during Desert Shield in August 1990 and Desert Storm in January 1991. The long buildup before the war allowed squadrons to become familiar with the desert environment and practice with new equipment such as the global positioning system (GPS).

1991 To Present

After the Gulf war in February 1991, assault support operations focused on humanitarian assistance (HA) operations, disaster relief, and noncombatant evacuations (NEOs) from war torn areas of the world. Operation Sea Angel in Bangladesh in 1991, Operation Restore Hope in Somalia in late 1992, Operation Uphold Democracy in Haiti in 1994, the tactical recovery of aircraft and personnel (TRAP) mission in Bosnia to rescue U.S. Air Force Captain Scott O'Grady in 1995, and the 1997 NEO in Albania are missions where assault support doctrine was applied. Though not all of these operations were combat operations, many of the same procedures can be applied during the conduct of HA operations and NEOs.

Since the earliest assault support operations in the 1920's, doctrine has changed very little. New equipment allows for increased capabilities, but the fundamental aspects of assault support remain the same. As one of the six functions of Marine aviation, assault support provides Marine air-ground task force (MAGTF) commanders with increased flexibility to conduct operations when and where they choose.

Chapter 2

Role in the Marine Air-Ground Task Force

Marine aviation is renowned for its close relationship with the ground combat element (GCE). When in support of a MAGTF scheme of maneuver, Marine aviation has the ability to provide significant firepower and mobility. This helps the MAGTF commander to maneuver within the battlespace to engage and destroy the enemy.

The aviation combat element (ACE) provides combat power and operational capability to the MAGTF. Individual aircraft combined and task organized into an ACE, provides a highly capable, responsive, force multiplier to the MAGTF commander. The ACE's unique capabilities complements other MAGTF elements. The ACE is not a substitute for any MAGTF element. The ACE contributes to mission accomplishment by providing all or a portion of the six functions of Marine aviation to the MAGTF commander.

The functions of Marine aviation should not be confused with capabilities of USMC aircraft. The six functions of Marine aviation—antiair warfare, offensive air support, electronic warfare, air reconnaissance, control of aircraft and missiles, and assault support—are broad descriptions of missions that may be performed by the ACE. More information on the six functions of Marine aviation can be found in MCWP 3-2, *Aviation Operations* (under development).

Capabilities are what the aircraft are able to do. A UH-1N can conduct assault support by providing combat assault transport of personnel, or control aircraft and missiles using organic radios or the AN/ASC-26 communications suite installed in the cabin. An AH-1W can conduct offensive air support (OAS) by firing an AGM-114 Hellfire missile at an enemy armored vehicle, and it can provide aerial reconnaissance using the night targeting system. The ACE provides multiple mission capability to the MAGTF through air crew training and skillful use of its aircraft.

Assault support uses aircraft to provide tactical mobility and logistical support for the MAGTF. It may be used to enhance the rapid buildup of MAGTF combat power and to facilitate rapid ground force maneuver. Assault support's uses are normally tactical, logistical, or administrative in nature. Assault support enhances the MAGTF commander's ability to concentrate strength against the enemy's selected weaknesses using speed and surprise. The MAGTF commander uses assault support to focus combat power at the decisive place and time and exploit opportunities created during combat. Assault support allows the MAGTF commander to sustain combat power. By conducting assault support operations, the commander can take full advantage of fleeting opportunities throughout the battlespace.

Speed and focus of effort are essential elements of maneuver, both of which the MAGTF commander can apply using assault support. Assault support provides the MAGTF commander with the capability to move assets over long distances quickly. The MAGTF can rapidly bring together assault support assets from multiple locations in order to mass forces in a single focus of effort. This ability to rapidly concentrate forces is a hallmark of naval expeditionary power projection.

Mobility and flexibility, gained by extensively using assault support aircraft in tactical operations, is an important part of Marine Aviation doctrine. Helicopters enhance the mobility and sustainability of Marine forces during operations well removed from their rear areas for extended periods of time. Improved aircraft design has increased the combat radius and load capacity of assault support aircraft, providing more flexibility and fire support to the MAGTF.

Types of Operations

Assault support involves the use of aircraft to provide tactical mobility and logistical support for the MAGTF, the movement of high-priority cargo and personnel within the immediate area of operations, inflight refueling, and the evacuation of personnel and cargo. Assault support operations require detailed, coordinated, and concurrent planning. Efficient execution of assault support operations requires thorough knowledge of mission, enemy, terrain and weather, troops and support available-time available (METT-T).

Combat Assault Transport

Combat assault transport provides mobility for MAGTF forces. It is used to rapidly deploy forces, bypass obstacles, or redeploy forces to meet the enemy threat. The increase in mobility, speed, range, and freedom of action provides the MAGTF commander a variety of diverse options. Combat assault transport allows the MAGTF commander to effect a rapid force buildup at a specific time and location of his choosing. In the near future, advanced aircraft designs (MV-22) may further expand these advantages to the MAGTF commander.

Air Delivery

Air delivery operations transport equipment and supplies to forward operating bases (FOBs) or remote areas. Airdrops (parachute or free fall) deliver equipment and supplies. Airdrops are done primarily by fixed-wing transport aircraft. Airdrops are conducted when surface or helicopter transport cannot fulfill resupply requirements due to range, closed lines of communications (LOC), lack of adequate airfields, prohibitive ground tactical situation, high tonnage, or the need to reduce response time. The supported commander selects the drop zone (DZ) using the following criteria:

- The drop zone should be free of obstacles.
- Aircraft approach routes are not over enemy-controlled territory.
- The terrain should be flat.
- The DZ should be a rectangular area with prevailing wind along the zone's long axis.
- The terrain should have prominent features.

The best DZ is close to an area with ample cover and concealment. This allows materiel recovery, segregation, inventory, and preparation for distribution without exposing personnel to enemy observation or fire.

Aerial Refueling

Currently, Marine KC-130 aircraft serve as airborne tankers for rotary- and fixed-wing aircraft with the probe and drogue system. Aerial refueling allows Marine aircraft to conduct flight-ferrying operations, extend time on station, and extend mission range.

Air Evacuation

Air evacuation is the transportation of personnel and equipment from FOBs or remote areas. This includes flights from areas of operations to secure rear areas, MEDEVAC, and extraction of forces. Helicopters and fixed-wing transport aircraft perform air evacuations.

Tactical Recovery of Aircraft and Personnel

TRAP missions facilitate the recovery of personnel and equipment while avoiding additional loss. The TRAP mission is an implied task associated with all MAGTF operations. Specially trained and briefed aircrews, with a task organized force from the GCE are assigned to perform TRAP missions. TRAP missions are conducted when the tactical situation prevents the utilization of traditional search and rescue techniques and only when survivors and their locations are confirmed. TRAP missions stress—

- Detailed planning.
- Assigned and briefed aircrews.
- Confirmation of survivors and their locations.

By using the TRAP concept, the Marine Corps fulfills the Joint Chiefs of Staff (JCS) requirement

for each Service to be able to perform combat search and rescue (CSAR). Using TRAP techniques, Marine forces are able to perform self-supporting SAR operations and some external SAR support. SAR is a secondary task, and its execution should not detract from primary warfighting functions. Marine forces currently lack the organic capability to effectively conduct searches when the survivor's location is unknown, particularly in a medium or high threat environment.

Air Logistical Support

Fixed-wing aircraft perform air logistical support by providing assault support of Marine ground forces in much the same manner as helicopters. Air logistical support delivers troops, equipment, and supplies to areas beyond helicopter range and lift capability or when surface transportation is slow or unavailable. The Marine Corps' limited quantities of transport aircraft restricts their use in amphibious assaults, operations ashore, or contingency plans. If large-scale, long-range air operations exceed MAGTF capabilities, additional support should be requested from the joint force commander (JFC).

Battlefield Illumination

Fixed-wing or rotary-wing aircraft can be used to provide light (battlefield illumination) in the battlespace. Battlefield illumination can be visible or invisible (infrared spectrum) to the naked eye and can last for a few minutes or several hours.

The Levels of War

The seven types of assault support offer the commander a wide range of options with which he can use to develop operation plans. Assault support employment strategy depends on the MAGTF's mission and the enemy's capabilities. The MAGTF commander considers assault support employment methods during the planning phase and throughout the operation's execution. Assault support operations vary in intensity throughout the operation and may be employed in pursuit of tactical, operational, or strategic objectives.

MCDP 1, *Warfighting*, states that "in war, tactics focuses on the application of combat power to defeat an enemy force in combat at a particular time and place." This explains assault support's most common use in the levels of war. During assault support operations at the tactical level, aviation may be employed with ground or naval forces to—

- Provide mobility to the MAGTF.
- Exploit opportunities presented by the enemy or created by friendly forces.
- Rapidly concentrate combat power at the most advantageous time and place.
- Help maintain the tempo of operations and the momentum of the attack.

The operational level of war is the link between strategic and tactical levels. The goal of a force's actions at the operational level of war is to gain strategic results from tactical efforts. The MAGTF may be the first force to be committed to a theater of operations. The MAGTF commander's actions at the tactical level will have strategic implications as they will shape future operations in that theater. The commander must decide when, where, and how to engage the enemy at a particular place and time in order to achieve a strategic result. Assault support operations allow the commander to maintain an advantage in speed and surprise over the enemy. In this way the commander can drive the fight in the desired direction. The commander can shape events using assault support to create favorable conditions for future combat operations. This could mean air logistical support to sustain tactical operations over an extended period of time or combat assault transport to attack the enemy's vulnerable flank or rear area. All tactical actions must seek to gain strategic results.

The strategic level of war is where national strategy—the art and science of using political, economic, military, and informational power—is focused to attain national policy objectives. Assault support operations fit within the framework of strong military capabilities that can enable the nation to meet its objectives. However, operations based on assault support capabilities such as NEOs are directly linked to the national policy of

safeguarding the lives of American and allied citizens. Therefore, assault support operations can have direct strategic implications.

Command Relationships

The relationship between the MAGTF commander and the ACE commander typifies Marine Corps command relationships. The MAGTF commander provides the ACE commander with the mission and the commander's intent. The ACE commander determines the most effective method of employment of ACE assets to accomplish the mission and meet the commander's aim.

A helicopterborne assault is one of the most common assault support operations. Refer to MCWP 3-11.4, *Tactical Fundamentals of Helicopterborne Operations* (under development) for more specific information on helicopterborne assaults. A look at the helicopterborne force will reveal the importance of command relationships.

Helicopterborne assaults require task-organizing both ground and aviation assets to accomplish the MAGTF scheme of maneuver. The MAGTF commander decides to execute the operation. The ACE, GCE, and combat service support element (CSSE) commanders plan the mission together. The ACE commander is responsible for providing mobility and fire support for the assault. The GCE commander is responsible for planning the ground tactical mission to include maneuver and fire support planning. The CSSE commander plans how to support both the ground and aviation plans. The commanders accomplish this by directing subordinate units to form the helicopterborne force (see fig. 2-1).

The MAGTF commander decides command relationships. The most important relationship in the helicopterborne force is the one between the Helicopterborne Unit Commander (HUC) and the Air Mission Commander (AMC). The MAGTF commander decides what needs to be done and designates personnel to accomplish it. The MAGTF commander is the common superior and will make the final decision if any contentious issues arise.

Unity of command is the most important and fundamental consideration during these operations. In a combined arms effort, unity of command promotes coordinated action toward a common goal required for mission accomplishment.

The AMC is responsible for accomplishing the air mission. He determines what assets are required, such as the number of transport, escort, and support aircraft. He determines the route of flight for the mission. It is important that he considers primary and alternate routes. Changing routes can affect the fire support plan. The authority to change the route may be delegated to the AMC by the MAGTF commander.

The HUC is responsible for accomplishing the ground tactical plan and choosing the required assets. The buildup of combat power in the objective area is critical early on and must be considered carefully.

Landing zone (LZ) selection is critical in the early phases. The HUC and AMC must agree on primary and alternate LZs. They must be large enough to land the helicopterborne force in tactical integrity, be clear of obstacles, and most importantly, be covered by fire support assets. The authority to change LZs may be delegated to the HUC by the MAGTF commander. Also identified in the early planning phases is who is supporting whom. By delegating authority and identifying supported/supporting relationships during mission planning conflict resolution most likely will be resolved before executing the mission.

Capabilities

Assault support is an integral part of the total MAGTF effort because of its many capabilities. The MAGTF performs assault support missions during day, night, and adverse weather

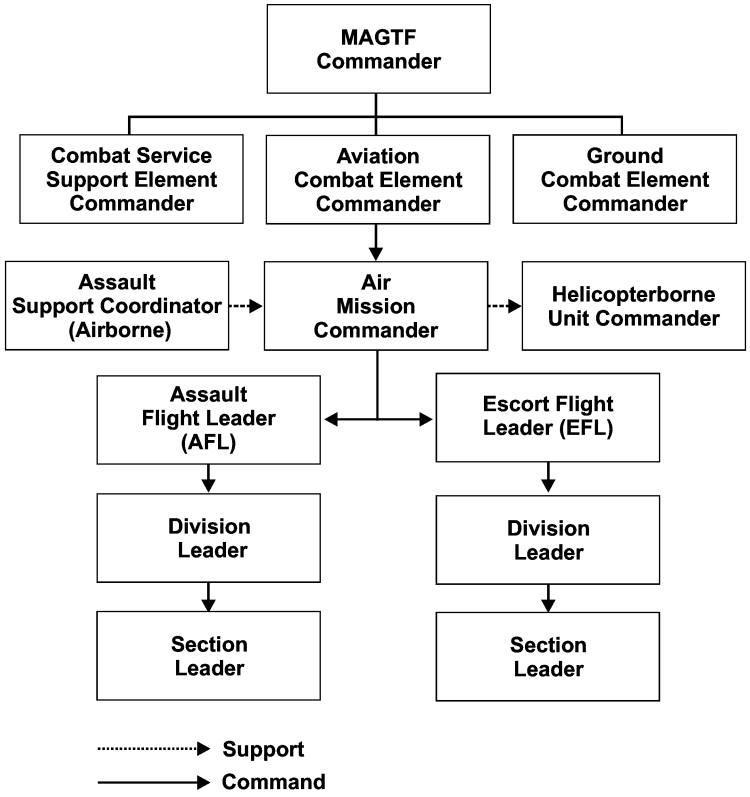

Figure 2-1. Command Relationships of a Helicopterborne Force.

conditions. Reliance on assault support increases when movement of personnel and equipment must be done quickly over long distances or over prohibitive terrain. Assault support's principal advantage is its capability to quickly move MAGTF forces and equipment throughout the battlespace. Assault support offers the MAGTF commander a wide range of capabilities from improving friendly morale to bringing devastating combat power to bear from any direction to decisive points on the battlefield. Other capabilities of assault support aircraft are varied. The following areas are not all inclusive.

Observation

Aircrews performing assault support missions can observe large areas and report enemy activity and movement in areas hidden from ground observation.

Flexibility

Diverting assault support aircraft from one mission to another allows the MAGTF commander to exploit fleeting battlefield opportunities. The ability to integrate supporting arms enhances the MAGTF's combined arms effects. Assault support operations allow the commander to attack from any direction, bypass obstacles or enemy strengths and provide responsive reserves or reinforce committed units. The commander can resupply units in otherwise inaccessible locations.

Employment of aerial refueling or rapid ground refueling (RGR) provides the means to recover aircraft, equipment, and personnel from hostile areas. Access to fuel increases the combat radius or time on station of aviation assets. These options available to the commander have a positive effect on friendly morale and destroy enemy

morale. The MAGTF commander should exploit the psychological effect that aviation has on both friendly and enemy forces.

Use During Limited Visibility

Darkness or limited visibility can provide a unique opportunity for employing assault support assets. Planning and executing assault support missions under these conditions require more precision. The ability to exploit degraded enemy visual acquisition and to strike during periods of minimum alert greatly enhances aircraft survival and aids in mission accomplishment.

Limitations

Assault support limitations must be considered during planning. Specific assault support limitations follow.

Limited Visibility

While darkness or limited visibility can be advantageous, it can also present limitations to assault support. Problems can occur when aircraft encounter difficulties during rendezvous, approaches, and landings. Troop and cargo loading and unloading are also slower and more difficult. Planners should anticipate delays and increase mission time requirements.

Rotary-wing assault support aircraft currently have no radar capability. Night vision systems are available but cannot duplicate daylight conditions. Night or limited visibility operations require close attention to planning specific phases of each mission. Problems can be offset by using smaller formations and larger intervals between formations to reduce landing zone congestion. Route and LZ selection are important for navigation and safe conduct of takeoffs and landings.

Using NVDs allow aircrews to conduct night operations more safely. However, NVD use does not guarantee tactical success. Effective NVD use requires a full understanding of their capabilities and limitations as they apply to each tactical situation.

Weather

Weather at the landing zone is more limiting than weather en route or at home base. Temperature extremes and wind velocity can seriously affect helicopter performance. Low ceilings and poor visibility decrease assault support effectiveness, influence escort tactics, and hamper fire support coordination.

Landing Zone Identification

LZ identification is one of the most difficult aspects of assault support missions. Improvements to navigation systems with GPS has helped considerably, but still LZs must be identified visually before landing. Proper map study, aerial imagery, aircraft sensors or systems (forward-looking infrared, GPS), and accurate LZ descriptions will decrease erroneous identification of LZs. Planners should use initial terminal guidance teams or LZ marking whenever possible.

Reduced Radius of Action

Fuel on board determines radius of action or time on station. Increasing an aircraft's payload beyond a certain point reduces the amount of fuel an aircraft can carry and reduces its time on station. Refueling at FOBs reduces this limitation but requires additional planning, resources, and coordination.

Communications

Coordination of assault support missions with the controlling agencies and fire support assets requires reliable radio communications. Real-time information is crucial and cannot be overemphasized. Thorough communications planning can provide secure, reliable radio transmissions and enhance alternate means of communications such as message drop or face to face liaison.

Enemy Defenses

Enemy defenses affect the conduct of assault support missions. Development of sophisticated air

defense systems deters air support. Local air superiority will greatly increase the ability to successfully conduct assault support missions. Suppression of enemy air defense (SEAD) may be required both before and during assault support operations. Enemy surface-to-air weapons, fighters, and small arms fire must be considered when evaluating risk and determining routes.

Required Escort Support

The purpose of an escort is to destroy, neutralize or suppress a threat before it is able to influence the assault support mission. Assault support assets do not posses self-defense capabilities to counter a formidable threat. The use of additional assets to ensure the safe arrival of MAGTF forces into the objective area may be required. Most commonly, the assault support mission will incorporate armed escorts to accompany the assault support aircraft en route or clear an objective area prior to arrival of assault support assets.

Chapter 3

Planning

Joint and combined operations require thorough planning to ensure success. Planning operations that will optimize the MAGTF's strengths and exploit the enemy's vulnerabilities is the key to success. Simple, well-thought-out plans ensure the successful completion of operations. Assault support operations are conducted with other supporting arms. Offensive air support, artillery, and naval surface fire support (NSFS) integration requires extensive planning and precise execution for effective assault support employment. See MCWP 3-16, *Fire Support Coordination* (under development), and FM 6-20-1, *The Field Artillery Cannon Battalion*, for more information on indirect fires in support of assault support operations.

MCDP 5, *Planning*, states "Proper planning puts us in the position to act when necessary or advantageous and not merely to react to developments." Central to an assault support operation's success is a flexible but simple plan.

Flexibility in execution comes directly from a well-understood, integrated, and coherent plan. A basic plan that is simple and flexible can survive changes. Assault support missions, by their nature, have the potential to become very complex. Simplicity must be maintained, but planners should not sacrifice detailed, well-coordinated planning.

The Marine Corps Planning Process

The Marine Corps Planning Process (MCPP) has evolved from the 16-step deliberate planning process and the rapid planning process. Aviation planning should follow a similar process or cycle. The only variable is time available to conduct the planning. The following is a six-step, generic planning progression that can be entered at any echelon.

Mission Analysis

The purpose of mission analysis is to review and analyze orders, guidance, and other information provided by higher headquarters and to produce a unit mission statement. Mission analysis drives the MCPP.

Course of Action Development

During course of action (COA) development, planners use the mission statement, commander's intent, and commander's planning guidance to develop several COAs. Each proposed COA must be determined suitable, acceptable, and complete with respect to the current and anticipated situation, mission, and the commander's intent. Approved COAs are further developed in greater detail.

Course of Action Analysis

Each friendly COA is examined and evaluated against possible enemy COAs. Environmental factors are also considered at this point in the process. Planners look at strengths, weaknesses, shortfalls, and risks presented by each COA. Potential branches and sequels are identified at this time. Understanding and improving each COA is best done at this step in the process.

Course of Action Comparison and Decision

In COA comparison and decision, the commander evaluates all friendly COAs against established criteria and then against each other. The commander then selects the COA that he feels most likely will accomplish the mission.

Orders Development

With the commander's intent, guidance, and COA selection, the staff develops orders to direct the actions of the unit. Orders serve as the principal

means by which the commander communicates his decision, intent, and guidance.

Transition

This is the point where an orderly handover of a plan is made to those who will be executing the plan. The unit executing the plan will have the situational awareness and rationale for making decisions required for a coherent shift from plan to action.

The MAGTF Air Tasking Cycle

The MAGTF air tasking cycle has evolved into six phases to mirror the joint air tasking cycle. It is designed to occur over a 36- to 72-hour period. The cycle follows the path of command aviation guidance (which includes apportionment), target/air support mission development, allocation and allotment, tasking, force execution, and combat assessment.

Phase I: Command and Aviation Guidance

The MAGTF commander will provide guidance through mission orders, by clearly conveying his intent, and by designating the MAGTF main effort. The commander's guidance and objectives identify target priorities, procedures, fire support coordination measures, and rules of engagement. Apportionment is the determination of the total level of effort that should be dedicated to the aviation tasks required to accomplish the MAGTF's mission. The ACE commander submits a recommendation for the apportionment of the ACE to the MAGTF commander for approval.

Phase II: Target/Air Support Mission Development

The specific objectives described by the commander are used to focus specific target and air support mission development. The end product of this phase of the air tasking order (ATO) cycle is a prioritized list of targets and a prioritized list of air support missions.

Phase III: Allocation and Allotment

Allocation is the translation of the level of effort into total number of sorties (by aircraft type) available for each task. Allocation includes the submission of preplanned air support requests by the ACE, GCE, and CSSE commanders. Preplanned requests include joint tactical airstrike requests (JTARs), assault support requests (ASRs), and joint tactical airlift requests.

Allotment of sorties is then decided to support execution of the MAGTF mission. For example, 30 CH-53E sorties are available for a day during the operation. The GCE commander needs to conduct a helicopterborne assault, and the CSSE commander needs to set up a refueling point to support the GCE scheme of maneuver. Each subordinate element is given a percentage of the 30 sorties to fulfill its requirements.

Phase IV: Tasking

Tasking is the process of translating allocation and allotment decisions into an ATO. The ACE commander passes on the tasks to the units involved. The MAGTF ATO assigns missions and mission support responsibilities to specific squadrons.

Phase V: Force Execution

On receipt of the ATO, an aircraft squadron commander assigns individual aircrews specific missions. Each mission commander then plans the mission with support from the ACE staff. Task-organized groups of aircraft then execute the assigned missions.

Phase VI: Combat Assessment

Combat assessment is the evaluation of the results of missions and their effectiveness in accomplishing the command objectives. Combat assessment should include bomb damage assessment (BDA) and reattack recommendations. The ACE staff assessment is forwarded to the MAGTF commander for determination of overall mission success and to recommend changes regarding future operations.

Although combat assessment marks the end of the ATO cycle, it provides input for the next air tasking cycle and subsequent command aviation guidance, target development, allocation, allotment, tasking, force execution, and combat assessment. In essence, there can be three simultaneous ATOs: the ATO in execution, the ATO in production, and the ATO in planning.

Effective Employment

Several conditions are required for effective assault support employment. Assault support effectiveness increases when—

- Air superiority has been attained and maintained.
- Enemy air defenses have been suppressed, neutralized, or destroyed.
- Missions are planned so as to use terrain and environmental conditions to gain maximum advantage.
- Missions are planned with flexibility as part of the command and control plan.

Intelligence Preparation of the Battlespace

Due to the vulnerability of assault support assets, intelligence preparation of the battlespace (IPB) is extremely important in assault support operations. IPB is the analysis of the environment and the threat in a specific geographic area. It is designed to support the commander and his staff in making estimates of the situation and developing COAs. IPB helps the commander to selectively apply and maximize combat power at critical points in time and space. IPB determines the threat's likely COA and describes the environment in which the MAGTF is operating and how the environment may affect the MAGTF's plans. More specific information on applying IPB to assault support operations can be found in FM 34-130, *Intelligence Preparation of the Battlefield*.

Threat Levels

Threat levels determine assault support feasibility. There are three general threat levels: low, medium, and high. There is no clear division between these threat levels. Air defense systems that present a low or medium threat level for one aircraft type may present a high threat level for another aircraft type. A medium threat level during daylight hours may be a low threat level at night. Threat level determination allows an aircrew to tailor tactics to a particular situation and environment. Threat level planning is based on type, quantity, and quality of individual weapons and weapons systems. Control and communications systems used to integrate weapon systems assist threat level planning. The skill level possessed by the system operator is equally important to this process.

A low threat level allows assault support operations to proceed without prohibitive interference. Aircrews are free to select tactics that ensure effective use of aircraft capabilities. A low threat environment includes small arms and medium antiaircraft weapons. Limited optical acquisition antiaircraft artillery (AAA) with no integrated fire control systems also characterize a low threat environment.

A medium threat level allows acceptable exposure time of friendly aircraft to enemy air defenses. This threat level can restrict assault support flexibility in the immediate target or objective area. A medium threat environment includes limited radar or electro-optic acquisition capability not supported by fully integrated fire control systems. A fully integrated fire control system which is degraded because of terrain, weather, or other factors indicates a medium threat environment.

A high threat level exists when the enemy has an air defense system that includes integrated fire control systems and electronic warfare capabilities. The ability to conduct assault support operations is severely affected in a high threat environment. A high threat environment includes effective communications and control systems, tactical or strategic surface-to-air missiles (SAM), early warning radars, electronic warfare (EW),

integrated AAA fire control systems, and interceptor aircraft.

The decision by the MAGTF commander to employ assault support assets must be carefully weighed against the risk involved. Assault support aircraft are a finite resource, subject to multiple requirements from subordinate element commanders with tactical and logistical needs.

An estimate of the situation based on METT-T is a useful tool in determining those planning considerations that will affect assault support mission planning. The analysis of METT-T is crucial also to determining the commander's estimate. The MAGTF commander's analysis using the mission and the GCE commander's estimate of the tactical situation determine in large part the ACE commander's strategy to support the mission. The ACE commander's estimate of supportability summarizes aspects that influence any proposed COA. Planners must analyze the impact of aviation factors upon the particular situations and then determine how assault support assets can be best employed in support of the MAGTF commander's concept of operations and the ground scheme of maneuver.

More specific considerations for employment of assault support during the planning process follow. In addition, more detailed information on mission planning can be found in FMFM 5-70, *MAGTF Aviation Planning*.

Availability

The quantity, type, operational status, and capability of aircraft assigned determine assault support availability. The proximity of FOBs to the area of operations also affects availability.

Aircraft Capability

Although specific aircraft are best suited to perform certain missions, each squadron's tasks require similar capabilities across the board. Versatile, multiple mission capable aircraft are essential in MAGTF operations and are the foundation of Marine Corps aviation doctrine. The CH-53E (primarily an assault helicopter) can perform airborne control and coordination for assault support operations, while a UH-1N (primarily a utility helicopter) can provide combat assault transport of troops, supplies, and equipment. The versatility of assault support aircraft gives the MAGTF commander many options when considering mission execution.

Aircrew Currency/Proficiency

Aircrew training and experience levels are important considerations that mission planners often overlook. Aircrews must be properly trained for the mission to be performed. MCO P3500.17, *Training and Readiness Manual Volume 3*, (Volume 2 for the KC-130) provides a syllabus that will ensure aircrews are current in missions that they may be tasked to fly. Aircrew proficiency is determined by many factors such as number of flight hours a crew member has, number of times similar missions have been flown by the crew members, and length of time elapsed since the last time that similar mission has been flown.

Air Defense

Air defense considerations affect the MAGTF commander's COA. The air defense threat and the type of assault support requested determine the degree that the threat must be reduced. If the MAGTF commander determines that assault support employment is essential to accomplish the mission, the commander assigns high target priority to enemy air defense weapons. This ensures continuous employment of integrated supporting arms to destroy or neutralize the air defense threat.

Mission Classification

The ACE executes assault support missions as either preplanned or immediate missions. The ACE executes both types of support in response to specific requests. To request assault support, units use the ASR or the joint tactical airlift request. The type of request determines the type of support. See appendix B for more information on the ASR.

Preplanned Missions

Preplanned missions are performed according to specific tasking and time availability. Planning should be done far enough in advance to permit detailed mission coordination. Preplanned missions allow the ACE commander to manage air assets more effectively. Preplanned missions are either scheduled or on call. Mission requests are completed at the requesting unit and forwarded up the chain of command to the senior fire support coordinating center (FSCC). The requests are then passed to the ACE where they are included in the appropriate ATO.

Scheduled Missions

Scheduled missions are executed at a specific time. Aircrews are assigned a mission execution time. Scheduled missions provide effective coordination and economical aircraft use and require approval from each intermediate command level.

On Call Missions

On call mission aircraft are configured for a particular mission and placed in an appropriate ground or air alert readiness condition. The supported unit specifies the required support period.

Typically, detailed mission planning and aircrew briefing of all mission-essential information is not possible. Scheduled air support requires that the requesting commander identify his requirements and set a specific mission time well in advance. This is often impossible on a fluid, dynamic battlefield. On call missions allow the requesting commander to identify specific requirements without setting a specific time.

Immediate Missions

Immediate missions meet requests that arise during battle. They are not normally identified far enough in advance to permit detailed mission coordination and planning. Response time, or the action cycle, begins with the request and ends with execution. Response time is a prime consideration. An example of an immediate mission may be diverting aircraft from a preplanned mission to fill an immediate assault support request. While the diverted aircraft may not be the proper type or configuration, swift execution can exploit an unexpected enemy weakness or maintain the attack momentum.

The Marine air command and control system (MACCS) handles immediate mission requests. See MCWP 3-25, *Control of Aircraft and Missiles*, and MCWP 3-25.3, *Marine Air Command and Control System Handbook*, for more discussion on the MACCS. Appropriate command and control agencies monitor and approve the request. Mission details are coordinated and issued while aircraft are assigned and moved toward the area. Immediate air support requires extensive use of electronic communications for effective coordination. This communication may be difficult in a high-intensity jamming environment.

Support Requirements

During the planning process, specified and implied tasks will indicate the type of support the mission will require. Range, enemy defenses, and size of the helicopterborne force will dictate the support requirements needed to ensure mission accomplishment. Logistics, communications, and supporting arms integration are all areas where support will be required.

These supporting elements allow assault support aircrews to concentrate on mission accomplishment. Supporting elements degrade the enemy's air defense capability and reduce the number of aircraft exposed to enemy weapons, while strengthening the commander's plan with logistical and communications support.

Escort Operations

Escort aircraft provide protection for assault support missions. Attack helicopters and fixed-wing fighter and attack aircraft can escort assault forces. Escorts are responsible to the AMC for the following:

- Protection from rotary-wing threat aircraft.
- Protection from fixed-wing threat aircraft.

- Protection from enemy ground fire.
- Route reconnaissance.
- LZ clearing by fire if necessary.
- Downed aircraft support.

Employing escort aircraft depends on many factors. Planners should review recent intelligence and determine the current air defense and ground threat. If enemy tactics show that assault support aircraft are the main target, deceptive measures can be used to simulate a helicopterborne force and draw the enemy aircraft into contact. Escort aircraft should be positioned where they can provide the greatest protection to the helicopterborne force.

Assault Force Self-Defense Capability. There may be a reduced need for attached escort if the assault force has a self-defense capability. Aircraft performance, onboard weapons, aircrew training, and low altitude tactics can provide limited self-defense capability. Careful consideration must be given to the vulnerability of assault support aircraft in an unescorted mission.

Enemy Surveillance Capability. The enemy's ability to detect aircraft will affect the size, routing, and escort tactics of the assault support mission. Smaller more maneuverable formations may be used if the enemy has sophisticated surveillance equipment. The enemy's surveillance capability will determine the type of escort used. For example, a detached escort might be more useful than an attached escort because attached escort aircraft increase the formation's size, therefore increasing the chance of detection.

Enemy Air Defenses. Known enemy air defense assets may be dealt with in different ways. Navigation around the SAM sites, preemptive strikes, or SEAD during the assault support mission are options available to the commander. All will affect mission planning and escort tactics.

Ordnance Loads. Escort ordnance loads depend on the threat and available aircraft. Whenever feasible, escort ordnance loads need to be tailored to the mission and the enemy.

Attached Escort Technique. Attached escort techniques provide visual weapons coverage and responsive fires for threat engagement during medium to high threat conditions. Attached escort aircraft maintain close contact with the assault force. This close contact can reduce the attached escort's speed and freedom of action. Attached escort aircrews may find themselves in a defensive or reactive posture at the start of an engagement. If the escorts are in a defensive posture, the entire assault support package may be in this posture also. Consequently, the assault support package and attached escort may be limited in maneuverability and tactics selection.

Detached Escort Technique. Detached escort techniques provide reconnaissance and selected coverage at predetermined sites en route in low to medium threat levels. Detached escort aircraft provide protection by clearing a path for the assault force. Detached escort aircraft try to prevent the enemy from closing with the assault force. Detached escort allows escort aircrews to retain the initiative. Detached escort also allows the escort platforms more options in tactics selection and engagement parameters due to greater flexibility in employing all onboard weapons systems. However, the assault force may suffer serious losses if attacked by enemy forces that evade the detached escort. This is especially true if assault support aircraft have a limited self-defense capability.

Combined Escort Technique. Attached and detached escort techniques combined may provide the best of both worlds for the assault support flight. Combined escort provides a defense in-depth, horizontally and vertically, and around the assault support aircraft. Although providing the best all-around protection for the assault support flight in all threat levels, combined escort is costly because it requires more assets than the other escort techniques.

Electronic Warfare. EW aircraft protect assault support aircraft through electronic attack (EA), electronic support (ES), and electronic protection (EP). Electronic attack can be used to deceive the enemy by sending misleading information about

assault forces' speed, altitude, direction, and size. EW planners can recommend to the mission commander EW tactics that will provide the greatest assault force protection. The assault force mission commander and the EW planner should consider the following:

- Initial jammer activation requires careful planning to prevent early detection of the assault force.
- Preemptive or reactive jammer assignments are superior to threat-specific, reactive jammer assignments.
- The length of time EW support is necessary to protect assault support aircraft.
- EW aircraft are vulnerable to enemy fighters, since they maintain a constant position and perform little maneuvering. Fighter coverage improves EW aircraft survivability.
- EW aircraft integration with the assault force and other MAGTF EW assets is critical.
- Threat electronic countermeasures effectiveness.
- Unanticipated threats and responses should be identified.
- Electronic deception capabilities of both friendly and enemy forces must be known.

Suppression of Enemy Air Defenses

SEAD reduces assault support aircraft attrition by degrading enemy air defense system effectiveness. SEAD uses supporting arms (i.e., artillery, NSFS, and aircraft) and other available means to deter, suppress, or destroy the enemy's air defense capability. SEAD should be integrated not only with assault support aircraft but with other supporting aircraft. Detection of SEAD aircraft alone may change the enemy's normal operating procedures. High-speed antiradiation missiles (HARMs) or antiradiation missiles (ARMs) can suppress or destroy radar sites. Because SEAD effects are short-lived, these missions should be timed to give maximum protection to the assault force. Mission planners should—

- Determine SEAD requirements.
- Determine assets available for SEAD.
- Study the assault force's route of flight.
- Determine which enemy systems pose major threats.
- Determine number of SEAD aircraft required.
- Coordinate HARM/ARM timing to provide maximum assault force protection.
- Determine placement of SEAD aircraft in relation to the assault force and the threat.
- Determine the need for fighter aircraft to protect SEAD elements during ingress and egress.
- Set and understand sector responsibilities and priorities if there are more threats than available assets can cover.
- Review HARM/ARM delivery envelopes and launch procedures.
- Keep the mission commander informed of SEAD capabilities.

Deception Operations

Deception operations are those measures designed to mislead the enemy by manipulation, distortion, or falsification of evidence. The goal is to induce the enemy to react in a manner against his interests. Deception operations may be aimed at the individual who is most influential on enemy operations in the MAGTF zone. Deception operations are planned to elicit a specific action from the enemy, such as committing forces elsewhere or maintaining strength in an area the MAGTF intends to avoid. Recent deception operations include the use of the 4th MEB off the Kuwaiti coast during Desert Storm to keep Iraqi forces tied up along the coast.

Successful deception operations must have a target, the story has to be credible, and they must bring about the desired effect. To provide deception for the assault force, planners should—

- Plan the deception as an integral part of the assault force mission plan and coordinate with the total MAGTF deception effort.
- Vary flight profiles to simulate different mission types.
- Use decoy aircraft or drones to pose a threat from a different direction than the actual threat.

- Use EW to present selected enemy radars or targets with false information.
- Make the deception detectable by the enemy.
- Show deception as a credible threat.
- Ensure that the assault force remains undetected.
- Risk deception aircraft in proportion to the expected gain.
- Anticipate the most likely enemy response based on he enemy's doctrine and MAGTF intelligence.

Operations Security

Operations security (OPSEC) assists in denying the enemy's ability to use collection assets to locate friendly forces and determine their intentions. The less information the enemy has concerning assault support operations, the easier it is to conduct a successful operation. Planners must carefully analyze enemy capabilities to determine if OPSEC measures are adequate for the planned mission. OPSEC for assault support missions may be accidentally compromised by using—

- The same ingress and egress routes.
- The same frequencies, code words, and authentication procedures.
- Flight profiles that place assault support aircraft in enemy search or early warning radar coverage areas.
- Radios, radars, radar altimeters, or other emissions.

Base of Operations

Operational deployment of assault forces involves the relocation of forces to desired areas of operation. Critical deployment factors include the selected transportation and the availability of operational and support facilities. The decision to deploy forces is based on the assets involved, assigned tasks, supportability of the deployed force, and national defense needs.

Because of the ACE's self-deployment capability, its units may be the first MAGTF forces to arrive in the area of operations. During the deployment phase, the MAGTF commander may designate the ACE as the main effort. This is especially true when ACE assets are the primary source of transportation to the theater for the force. Because of the Marine Corps expeditionary nature, operations can be conducted from austere sites. Operations from these sites require careful planning to be effective.

Forward Operating Base

The MAGTF's capability to project power is based on its ability to move to and operate from any area. The ACE contributes to this capability by staying close to the area of operations to increase responsiveness during all operational phases. FOBs, whether they are expeditionary airfields, enhanced local airfields, or forward arming and refueling points (FARPs) are the means by which Marine aviation provide this rapid response capability.

The future of MAGTF operations is moving towards the concepts of operational maneuver from the sea (OMFTS) and ship-to-objective maneuver (STOM). These concepts will keep most of the support assets on ship, reducing the requirement for building up large supply areas ashore. This will affect response time depending on the location of the objective area. Assault support planners will have to factor in transit time of aircraft to the objective and allow for multiple refueling options. STOM will aid in the logistical support of aviation units and increase force protection of both aviation and combat service support (CSS) units since they will be ship-based and less accessible to the enemy.

Chapter 4

Operations

Marine aviation operates as an integral part of the MAGTF. The MAGTF conducts operations using the principles of maneuver warfare to obtain maximum force capability and versatility.

Assault support, either fixed- or rotary-wing aircraft, can influence offensive and defensive operations by providing tactical mobility and logistical support at the decisive time and place. Helicopterborne assaults offer speed, surprise, and flexibility so the commander can react rapidly to a changing tactical situation. The helicopter's capabilities along with fixed-wing lift and range capabilities allow the MAGTF to strike over extended distances and terrain barriers. This allows the MAGTF to attack when and where the enemy is most vulnerable. Assault support aircraft are primarily movers of personnel, equipment, and supplies. Because of the helicopter's vertical lift capability, its use in assault support is dominant. It is a primary provider of combat assault transport, air evacuation, and TRAP. Fixed-wing aircraft provide significant contributions to the assault support function through air logistical support, aerial delivery, and aerial refueling. Both fixed-wing and helicopter assault support aircraft provide battlefield illumination.

Offensive Operations

Offensive operations are the means to decisive victory; however, victory is rarely the outcome of any one battle, offensive operation, or offensive maneuver. The commander's use of tools determines an operation's victory or defeat. A commander who gains and maintains a superior tempo, sustains the momentum of the offensive, and employs his force with the principles of war and the concept of maneuver warfare in mind is more likely to achieve victory. Aviation functionality, because it is inherently offensive, is useful in offensive or defensive operations in exactly the same way.

The ACE commander must be concerned with maintaining tempo, sustaining operational momentum, and effectively applying the six functions of aviation in the execution of the offensive. Economy of force is a major factor in the ACE's choice of options in executing offensive operations.

The helicopterborne assault is the most basic type of offensive operation conducted by assault support forces. It is the insertion or extraction of combat forces. Insertion is the movement of an assault force into an objective area, and extraction is movement of an assault force out of the objective area. When augmented with KC-130s, the helicopterborne force can conduct a variety of offensive operations over long distances.

Attack

An attack is a fast, violent, and coordinated maneuver supported by fire conducted to defeat, destroy, neutralize, or capture the enemy. A helicopterborne attack capitalizes on speed and flexibility to gain maximum surprise. Assault transport helicopters support an attack by inserting the helicopterborne force on or near the objective. Fixed-wing aerial refueling and transport add significant continuity to the attack capability. A helicopterborne force can conduct a hasty or deliberate attack based on the degree of planning, preparation, and coordination involved prior to execution.

The hasty attack trades preparation time for speed to exploit an opportunity. A hasty attack takes audacity and relies on speed and surprise to achieve the commander's objectives before the enemy can effectively respond. There is little time to plan; orders must be brief. Assault support planners rely heavily on training and standing

operating procedures to make a hasty attack a success.

The helicopterborne force, as part of a larger operation, may conduct a deliberate attack. A deliberate attack is a preplanned offensive action characterized by maneuver and firepower to close with and destroy the enemy. Assault support can play a key role in the rapid massing of forces to conduct a deliberate attack. Mission planners must have enough time to develop a detailed plan. Planners collect detailed information about the terrain to select appropriate pickup zones (PZ)s, LZs, DZs, and flight routes. Unlike hasty attacks on more familiar terrain and with recently acquired intelligence, deliberate attacks deep in the enemy's rear areas often do not allow aircrews to perform a visual reconnaissance of the flight routes or objective area. Planners must rely on detailed map studies, photographs, and other imagery to formulate their plans.

Exploitation

Exploitation is an offensive operation undertaken to follow up success in the attack. During the exploitation phase, assault support aircraft may be used to maintain constant pressure on the enemy by providing mobility to the exploitation force, allowing it to seize key terrain or engage high-payoff targets such as command posts, or support units deep in the enemy's rear area. Two chief characteristics of exploitation are speed and violence.

Pursuit

A pursuit is an operation to catch or cut off a hostile force attempting to escape, in order to destroy it. Pursuit forces trap and destroy the retreating enemy with coordinated maneuver and fire. Assault support aircraft can be used to bypass resistance and to deliver forces to seize objectives that are chokepoints for the retreating enemy. A helicopterborne force can cut off the enemy and delay its retreat so that coordinated fires from combined arms can destroy it.

One of the best examples of assault support aircraft use during offensive operations is Operation Dewey Canyon, conducted during the Vietnam War in the upper A Shau Valley and southern Da Krong Valley from 22 January through 14 March 1969. This was a multi-battalion operation involving the 9th Marine Regiment and two battalions of the 1st South Vietnamese Army Division.

On D-day, 22 January 1969, initial LZs were prepared by fixed-wing air strikes. The first landings occurred at 0800. In the rapid buildup that followed, CH-46s, under a protective umbrella of gunships and observation aircraft, brought 1,544 Marines and 46 tons of cargo into two LZs. By the evening of 24 January, a battery of 105mm howitzers were in place.

Over the next two months, the Marines conducted a series of leap-frogging maneuvers with helicopters to establish multiple fire support bases in the A Shau Valley. During Dewey Canyon, Marine helicopters flew 14,893 sorties for 5,050 flight hours, moved 3,515 tons of cargo, and lifted 21,841 troops.

During the March 1969 withdrawal from the A Shau more than 350 tons of cargo and 1,400 Marines were transported out of two fire bases without a casualty. Perhaps the most notable item of the operation was the fact that only one helicopter was lost in spite of adverse weather and a determined enemy.

Defensive Operations

Defensive operations are often less decisive than offensive operations. The defense is a force's coordinated effort to defeat an attacker and prevent it from achieving its objectives. An effective defense is never passive. Commanders may assume the defense in one area in order to mass forces in another area. Commanders conduct the defense only until they can resume the offensive. The ACE's role in defensive operations requires that the inherently offensive functional capabilities of Marine aviation focus on operations and maneuvers that benefit from an aircraft's speed, mobility, and flexibility. The ACE is no less dynamic in defensive operations than in the

offense and continuously seeks to create and exploit opportunities to defeat the enemy.

During defensive operations, the commander organizes the battlespace into three areas in which the defending force performs specific functions (see fig. 4-1). These areas can be further divided into sectors. A defensive sector is an area assigned to a subordinate commander. In the commander's sector the subordinate commander is provided maximum latitude to accomplish his defensive operations. The three sectors are the security area, the main battle area, and the rear area. A helicopterborne force can defend against an infantry-heavy threat by using the helicopter's mobility to achieve a maneuver advantage over the enemy. This allows the helicopterborne force to operate in the security area, main battle area, or rear area. Fixed-wing assault support functions in the defense are typically aerial refueling, air evacuation, and air logistical support.

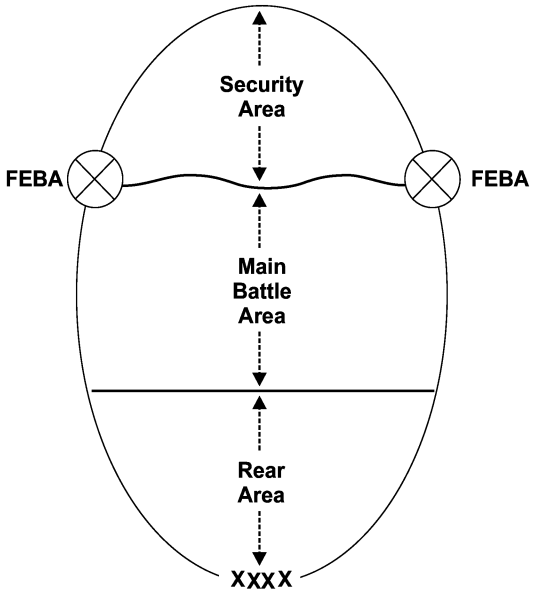

Figure 4-1. Organization of the Battlespace.

Security Area

Actions in the security area are designed to deceive the enemy on the location of the main battle area, cause the enemy to deploy early into attack formations, and make the enemy vulnerable to the effects of combined arms. Assault support aircraft can move engineers and equipment into and out of the security area in support of the MAGTF's barrier plan. They can provide mobility for reconnaissance teams or fire support teams placed in front of the main battle area. Battlefield illumination employed in the security area can expose an enemy entering the security area.

Main Battle Area

The main battle area (MBA) is where the MAGTF fights the decisive battle. It extends rearward from the forward edge of the battle area (FEBA) to the sectors given to the unit's subordinate elements. The helicopterborne force's superior mobility allows the commander to defend in greater scope. It fights a series of battles in depth, attacking from the front, flanks, and rear while using minimal forces to maintain surveillance over the rest of the assigned sector. Battle positions throughout the MBA should be selected and prepared along likely avenues of approach. Primary and alternate LZs and PZs should be selected for each battle position, in order to facilitate the rapid vertical movement of forces and supplies wherever and whenever they are required.

Rear Area

The rear area extends forward from a commander's rear boundary to the rear main battle area of responsibility of the commander's subordinate units. The rear area is provided primarily for the performance of combat service support functions. Assault support aircraft are normally employed to transport supplies and sustain operations of the MAGTF. Other functions of assault support aircraft in the rear area are transport of quick reaction or reserve forces, sensor insert, and reconnaissance of potential infiltration points.

Marine Expeditionary Unit (Special Operations Capable) Operations

The post-Cold War world is a world in crisis. The Marine Corps provides the Marine expeditionary

unit (special operations capable) (MEU[SOC]) to react properly to these events. This MAGTF is continuously forward deployed to react quickly to crises. The MEU(SOC) possesses specific maritime capabilities based on its expeditionary and amphibious nature. These capabilities are a refinement of the traditional capabilities of Marine forces afloat. These capabilities do not transform MEU(SOCs) into dedicated special operations forces (SOF). Rather, they make them far more useful as forward-deployed forces capable of dealing with a wider range of contingency and crisis response situations.

The mission of the MEU(SOC) is to provide the geographic combatant commanders the capability to conduct conventional amphibious and selected maritime special operations at night, during adverse weather, from over the horizon, under emission control (EMCON) conditions, from the sea, and by surface or air. Due to its unique training and focus, MEU(SOC) forces are capable of commencing mission execution within 6 hours of notification. Assault support plays an important role in these missions and provides direct action support or intelligence gathering for the MAGTF. The ACE, especially in MEU(SOC) operations, brings a significant amount of firepower to the baseline MAGTF. Inherently light and expeditionary in nature, the MEU(SOC) gains from the ACE the mobility and responsive fire support necessary in small-scale, rapidly executed evolutions. Within most MEU(SOC) missions, assault support plays a significant role in deployment and sustainment of the force.

The MEU(SOC) ACE is built around a Marine medium helicopter squadron (HMM), reinforced with utility, attack, heavy-lift assault support helicopters, and fixed-wing attack aircraft. It often includes additional fixed-wing assault support aircraft (shore based). The MEU(SOC) ACE is normally task-organized to provide assault support, offensive air support, limited antiair warfare, control of aircraft and missiles, electronic warfare, and aerial reconnaissance.

The inherent capabilities of a forward-deployed MEU(SOC) are divided into four broad categories: amphibious operations, direct action operations, military operations other than war (MOOTW), and supporting operations. MCO 3120.9A, *Policy for Marine Expeditionary Unit (Special Operations Capable) [MEU(SOC)]*, for more information.

Amphibious Operations

Amphibious operations include amphibious assaults, raids, demonstrations, and withdrawals. They can be conducted on short notice, at night, under EMCON conditions via helicopter and/or surface means over extended ranges. Amphibious operations are discussed in greater detail in chapter 5.

Direct Action Operations

Direct action operations is the capability to conduct short-duration strikes and small-scale offensive action. In-extremis hostage rescue (IHR) and TRAP are some examples of the many operations that make up this category. Precision raids, ambushes, and direct assault using close-quarter battle skills are all tactics used during direct action missions.

TRAP is a direct action mission that satisfies the Joint Chiefs of Staff (JCS) requirement that each branch of the armed forces maintain its own search and rescue (SAR) capability. SAR is defined as a specialized task performed by rescue forces to effect the recovery of isolated personnel from a hostile environment during wartime or contingency operations. Recognizing the unique environments of maritime and amphibious operations, the Marine Corps fulfills this requirement with the TRAP mission.

TRAP is part of the assault support planning checklist and is usually planned as part of a helicopterborne assault. Aircraft and crew are usually earmarked for TRAP as either dedicated or as on call to be flown by an aircraft conducting the combat assault transport.

A TRAP mission is a raid that relies on specific and flexible force packaging designed to defeat the threat, protect the force, and successfully

recover isolated personnel without any loss to the package. The 8 June 1995 recovery of *"Basher 52"* (Captain Scott O'Grady, USAF) from war-torn Bosnia proved that detailed mission analysis, specific force packaging based on the threat, quick reaction, and adherence to sound tactic, techniques, and procedures (TTP) led to mission success.

Military Operations Other Than War

Included in MOOTW are NEOs, humanitarian assistance, and disaster relief. These operations focus on deterring war, resolving conflict, promoting peace, and supporting civil authorities in response to domestic crises. The ACE can provide air logistical support by moving supplies and personnel throughout the operations area.

MOOTW include many situations that challenge a commander. Assault support operations provide the commander with many options in meeting these challenges.

Noncombatant Evacuation Operations. NEOs are characterized by uncertainty. Noncombatants may include U.S. citizens, U.S. military personnel, citizens of countries friendly to the U.S., or third country nationals (TCN). The Department of State plans for evacuations of U.S. citizens and TCN. The Department of State also determines when that plan will be executed.

NEOs require the commander to consider things not usually associated with offensive or amphibious operations. A NEO is similar to a raid. There is a rapid insertion followed by a planned withdrawal. The use of minimal forces to provide security for the evacuation forces and evacuees is important. Diplomatic considerations significantly influence the execution of a NEO. Situations may change as the NEO is conducted, depending on the political situation within the country and the threat. A NEO may take place in a permissive, uncertain, or hostile environment.

Permissive environments are characterized by little or no resistance from the host nation or its armed forces. ACE participation is minimal in a permissive environment, and noncombatants may depart the country via civil airline traffic. Military assistance, in the form of security forces, may be the primary focus of the NEO.

The degree of danger to the noncombatants is the concern in an uncertain environment. The host nation's military forces may be supportive of, neutral to, or opposed to the NEO. Assault support operations may be the only ACE participation due to political sensitivities. Innovative planning is necessary to ensure that fire support assets can support the NEO should the situation deteriorate.

A hostile environment can be characterized by civil unrest or full scale war. ACE participation can be expected to be at a maximum to insert combat forces, conduct convoy escort, and provide fire support. Operation Frequent Wind is an example of a NEO conducted under hostile conditions.

Following the withdrawal of most United States combat forces from the Republic of Vietnam and with the fall of Saigon imminent, contingency planners prepared for the evacuation of the last Americans in Vietnam.

Evacuation forces consisted of the 9th Marine Amphibious Brigade (MAB), which included Regimental Landing Team 4 and Provisional Marine Aircraft Group (PROVMAG) 39. PROVMAG 39's organic assets, 34 CH-53s, 27 CH-46s, 6 UH-1s, and 8 AH-1s, were augmented with 10 USAF H-53s. After surveys of candidate sites, the decision was made that the evacuation would take place from the Defense Attaché, Office (DAO)/Air America Complex at Tan Son Nhut airfield by C-130 aircraft and 9th MAB helicopters and from the U.S. Embassy by UH-1s and CH-53s.

On 29 April 1975, the effects of North Vietnamese air and artillery attacks against the DAO compound and Tan Son Nhut airfield had left the runway filled with abandoned aircraft and vehicles, precluding the use of C-130s for the evacuation. The evacuation had to be made solely by

helicopter. At 1215, 9th MAB was notified to begin the evacuation.

As 9th MAB Marines began the evacuation effort at the DAO Complex, the Commanding General, 9th MAB, received word from the U.S. Embassy that more than 2,000 people needed to be evacuated from the embassy grounds—a number far exceeding the capacity of the three UH-1 and one CH-53 lifts originally planned. Limited landing space precluded using large numbers of aircraft to evacuate the grounds. The solution was to divert all available CH-46s to land on the embassy rooftop and to use CH-53s to evacuate people from the embassy parking lot.

Helicopter extraction of evacuees continued from both the embassy and Tan Son Nhut airfield. At approximately 0012 on 30 April, the last of the 9th MAB elements at the DAO complex lifted off, returning thereafter to assist with the continuing embassy evacuation. The Commanding General, 9th MAB, then focused on evacuating the embassy for fear that Saigon might fall to the North Vietnamese before the end of the morning. Flights at the rate of one CH-53 and one CH-46 every 10 minutes ferried evacuees out of the embassy grounds. At 0458, the U.S. ambassador to Vietnam left the embassy compound aboard a 9th MAB CH-46. The last security element left the embassy at 0753, landing aboard Task Force 76 ships at 0825, ending Operation Frequent Wind. The ensuing action, Operation Frequent Wind, would result in the extraction of nearly 7,000 persons from the approaching North Vietnamese onslaught on Saigon. Remarkably, the extraction was completely carried out by helicopters, mostly MAGTF aviation.

Typically, MEU(SOC) units have conducted NEOs. However, NEOs may require a larger force to accomplish the mission. The example of Operation Frequent Wind illustrates that fact.

Humanitarian Assistance Operations. Assault support is especially important in HA operations. A force larger than a MEU(SOC) may be involved in HA operations. Usually, a joint task force (JTF) will be tasked with the execution of the relief effort. In a disaster, transportation infrastructures (roads, bridges, or railways) may be damaged or destroyed. This will hinder evacuating and assisting the affected population.

The MAGTF uses assault support assets to move homeless or injured evacuees to safe areas and to deliver food, medicine, and other vital supplies. The following factors should be considered when planning a disaster relief operation:

- Language problems.
- Coordination with local authorities.
- Special medical requirements of evacuees.
- Environmental conditions.

Supporting Operations

Supporting operations may include tactical deception operations, JTF enabling force operations, and port and airfield seizures. All of these operations are in support of larger operations. The 15th MEU's participation in Operation Restore Hope in Somalia in December 1992 was an example of a supporting operation. The Marines came ashore to secure the port and airfield, enabling the ships from Maritime Prepositioned Squadron-2 to offload their supplies. The Marines then improved the port facilities and roads out of Mogadishu, Somalia. This allowed follow-on forces from I MEF and the U.S. Army 10th Mountain Division to conduct relief operations in the country.

Chapter 5

Command and Control in Amphibious Operations

An amphibious operation is a military operation launched from the sea by Navy and landing forces embarked in ships and craft with the purpose of introducing the landing force ashore to accomplish an assigned mission. Amphibious operations may include assaults, raids, demonstrations, and withdrawals. Refer to Joint Publication 3-02, *Joint Doctrine for Amphibious Operations*, for more information.

Assault support provides the landing force with the ability to rapidly focus and project decisive combat power ashore and provides the MAGTF the speed, mobility, and flexibility necessary to accomplish the mission.

Assault support transport helicopters used in the ship-to-shore movement are subordinate landing force elements. The ACE executes the ship-to-shore movement according to the landing plan. The plan includes arrangements for shifting control of aviation operations to the commander, landing force (CLF) when the situation ashore permits.

Navy Tactical Air Control System

During the ship-to-shore movement, the commander, amphibious task force (CATF) coordinates and controls air operations through the Navy tactical air control center (TACC). Within the Navy TACC, the helicopter coordination section (HCS) coordinates helicopter operations. See figure 5-1.

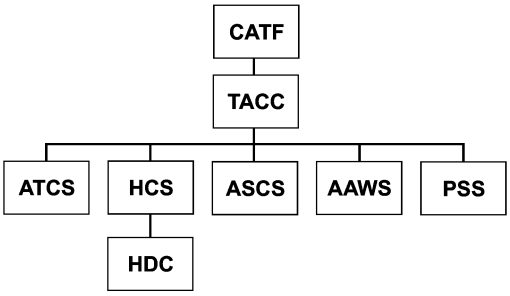

Figure 5-1. Navy Tactical Air Control System.

The HCS decentralizes control of the helicopter ship-to-shore movement to the helicopter direction center (HDC). The HDC is aboard ships capable of handling helicopter operations. The HDC coordinates all assault support helicopter operations through the TACC. The HDC maintains continuous radar surveillance of aircraft operating in its assigned control area.

The plan for ship-to-shore movement is very detailed and jointly developed. It requires precise coordination and timing. MCWP 3-31.5, *Ship to Shore Movement*, covers this information in greater detail.

As soon as practical, the CLF establishes air control facilities ashore. This extends the amphibious force's aviation control capabilities, increases surveillance, and accelerates response. Initially, air control agencies ashore operate in a standby status and monitor all air control circuits. The CATF and CLF decide when to transfer control from agencies afloat to agencies ashore. The transfer may be sequential as functions of the

MACCS become operational. Control agencies afloat continue to monitor communications circuits and are capable of resuming control, if required.

Marine Air Command and Control System

The Navy TACC controls all aviation assets, while afloat, in support of CLF. Once control is passed from CATF to CLF, the Marine tactical air command center (TACC) and its other subordinate agencies manage MAGTF aviation assets. The Marine TACC is the senior MACCS agency and provides centralized command and direction of subordinate activities. See figure 5-2. The Navy TACC then becomes a TADC and assumes a monitoring status. Other aviation control agencies follow.

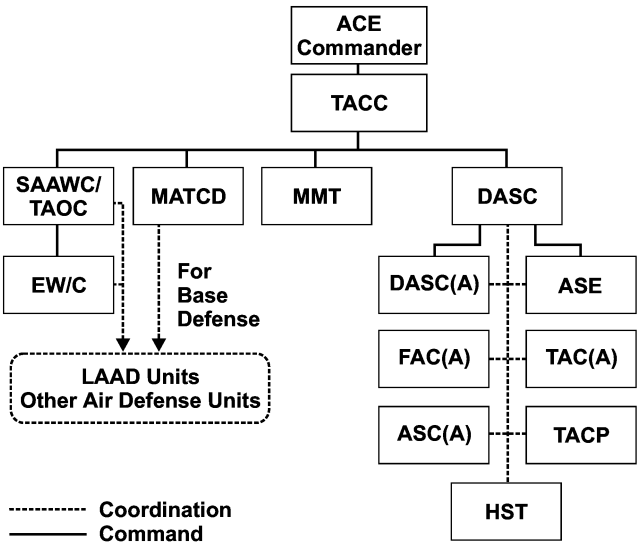

Figure 5-2. Marine Air Command and Control System.

Tactical Air Direction Center

During the build up of landing force combat power ashore, the CLF establishes a Marine tactical air direction center (TADC) to act as a coordinating agency between the other MACCS agencies and the Navy TACC afloat. The TADC is identical in organization, capabilities, and facilities to the Marine TACC. The TADC remains subordinate to the Navy TACC until control of aviation has been passed ashore. The Navy TACC afloat then becomes a TADC subordinate to the Marine TACC.

Tactical Air Operations Center

The tactical air operations center (TAOC) is under the operational control of the Marine TACC. The sector antiair warfare coordinator (SAAWC) commands the TAOC. The TAOC is the primary antiair warfare (AAW) agency of the MACCS. It detects, identifies, and controls the intercept of hostile aircraft and missiles and provides airspace management and operational assistance. The TAOC can perform limited TACC functions.

Direct Air Support Center

The direct air support center (DASC) is the air control agency of the MACCS primarily responsible for the direction and procedural control of air operations directly supporting the MAGTF's ground combat element (GCE). It processes and coordinates requests for immediate air support and coordinates air missions requiring integration with ground forces and other supporting arms. The DASC is usually the first principal MACCS agency ashore. It functions in a decentralized mode of operation, but is directly supervised by the TACC.

The DASC is established by the Marine air support squadron (MASS) and processes immediate requests for air support, coordinates aircraft employment with other supporting arms, manages terminal control assets such as forward air controller (airborne) (FAC[A]) and assault support coordinator (airborne) (ASC[A]) supporting ground forces, and provides procedural control of assigned aircraft, unmanned aerial vehicles, and itinerant aircraft transiting through its assigned area. The DASC can employ a DASC (airborne) (DASC[A]) aboard a KC-130 and provide extended line of sight communications with low flying aircraft. The DASC will normally be co-located

or electronically linked with the senior fire support coordination agency ashore.

In a MEF operation with multiple maneuver elements (divisions) within the GCE, the DASC may be located with the MAGTF force fires coordination center (FFCC). This location will centralize the management of close air support (CAS) and assault support aircraft between the GCE maneuver element and meet the commander's intent for maneuver and fire support.

The DASC will usually deploy air support elements (ASEs) to each major maneuver element FSCC, to provide it with the necessary links to the MACCS, in order to request and coordinate direct air support. ASE size and composition will vary and can be expanded or reduced as the current situation requires (consistent with the assets available). The DASC only has the capability to provide "procedural control" for aircraft operating in its area. In amphibious operations, the DASC will normally land in the same scheduled or on-call wave as the senior fire support coordination agency phased ashore.

Several employment options are available for the DASC, including an airborne configuration in a KC-130. MASS assets are tailored to provide support based on the mission. A MEF could require a task organization that uses the assets of more than one MASS. At the MEU level, a MASS detachment is task-organized as an ASE, and its capability is reduced due to its size. The size and capability of the MEF DASC depend on the number of units that request air support and the number of aircraft that execute air support missions.

The DASC maintains communications connectivity with the other MACCS agencies, the FSCC, FFCC, aircraft under its control, UAV squadron (s), and joint and other Service air support organizations. The DASC also requires connectivity with forward-based air assets to request launch in support of ground forces. See MCWP 3-25.5, *Direct Air Support Center Handbook*, for more information.

The DASC operates through several air control organizations. These organizations follow.

Tactical Air Control Party. A tactical air control party (TACP) is a subordinate operational component of a tactical air control system designed to provide air liaison to land forces and for the control of aircraft (Joint Pub 1-02). It is located within the GCE and provides ground commanders with the means to access direct air support. In the Marine Corps, tactical air control parties are organic to infantry divisions, regiments, battalions, and other combat arms units. TACPs establish and maintain facilities for liaison and communications between parent units and airspace control agencies, inform and advise the ground unit commander on the employment of supporting aircraft, and request and control air support. The TACP is a MACCS agency, but administratively it is not part of the MACG.

Tactical Air Coordinator (Airborne). A tactical air coordinator is an officer who coordinates, from an aircraft, the action of combat aircraft engaged in close support of ground or sea forces (Joint Pub 1-02). Within the MACCS, the tactical air coordinator (airborne) (TAC[A]) is a naval aviator or naval flight officer and the senior air coordinator having air authority over aircraft operating in the assigned area. The primary mission of the TAC(A) is to act as an airborne extension of the DASC, TACC, or FSCC, and to contribute to coordination among the tactical air control parties, airborne forward air controllers, and the fire direction of artillery and naval gunfire.

Forward Air Controller (Airborne). A forward air controller is a specifically trained and qualified aviation officer who exercises control from the air of aircraft engaged in close air support of ground troops. The forward air controller (airborne) is normally an airborne extension of the tactical air control party (Joint Pub 1-02). Within the Marine Corps, the FAC(A) is a naval aviator or flight officer who is specifically trained, qualified, and designated to perform air reconnaissance and surveillance, conduct terminal control of aircraft engaged in OAS operations, control artillery and naval surface fire support missions, act as a

radio relay, and control landing zone preparations.

Assault Support Coordinator (Airborne). An assault support coordinator (airborne) is an aviator who coordinates, from an aircraft, the movement of aviation assets during assault support operations (MCRP 5-12C). The ASC(A) is an experienced aviator with extensive knowledge of the MACCS who acts as an airborne extension of the DASC. The ASC(A) assists in providing situational awareness to the assault force, relays requests to the DASC, exercises launch authority for immediate and on-call missions, coordinates with the TAC(A), and provides routing recommendations to the air mission commander.

Helicopter Support Team. A helicopter support team is a task organization formed and equipped for employment in a landing zone to facilitate the landing and movement of helicopterborne troops, equipment and supplies, and to evacuate selected casualties and enemy prisoners of war (Joint Pub 1-02). Within the Marine Corps, helicopter support teams (HSTs) are accessed from the force service support group (FSSG), specifically, the landing support company of the support battalion.

Chapter 6

Emerging Concepts and Capabilities

As innovations move the Marine Corps to new ways to fight from the sea, a proven concept will remain as part of the foundation of our operations. Assault support operations will remain a cornerstone of ship-to-objective maneuver. The mobility, speed, and flexibility provided by assault support aircraft, combined with the remaining five functions of Marine aviation, provide the commander wide-ranging options in combat and noncombat operations. Assault support began in the 1920's as a means of resupplying the Marine on the ground. Assault support has become a way for the commander to project power throughout the battlespace.

Operational Maneuver From the Sea

Operational maneuver from the sea (OMFTS) is a concept for the projection of naval power ashore. OMFTS is based on innovations in military systems and equipment that diminish the natural barriers of the sea and shoreline. OMFTS also capitalizes on significant enhancements in information management, battlespace mobility, and conventional weapons accuracy and lethality.

The heart of OMFTS is the maneuver of naval forces at the operational level. The aim is to exploit a significant enemy weakness to deal a decisive blow. Ship-to-objective maneuver (STOM) is a concept envisioning the projection of forces ashore in their tactical formations to a decisive place and in sufficient force to ensure mission accomplishment. Landing forces will engage enemy forces only as required to achieve the freedom of action to accomplish operational objectives.

STOM is not just a traditional amphibious operation conducted from a greater distance. It is a tactical concept for conducting amphibious operations in support of OMFTS. STOM resulted from the combining of maneuver warfare concepts with OMFTS's objectives. STOM emphasizes tactical mobility, operational speed (or tempo), and operational flexibility to counter enemy strengths and exploit enemy weaknesses. Projected operations using STOM will rely on emerging and existing platforms such as the advanced amphibious assault vehicle (AAAV), the landing craft air cushion, and the CH-53E in addition to the aircraft and command control system improvements described below.

The MV-22 Osprey

The MV-22 Osprey has the radius, payload, and survivability to realize STOM. Acquisition of this medium-lift tiltrotor aircraft represents an enormous improvement in our ability to project combat-ready forces from over the horizon as envisioned in OMFTS.

The MV-22 will fly twice as fast, five times as far, with three times the payload of our aging medium-lift CH-46 helicopters. These unique capabilities give the MAGTF commander maximum ability to strike further, move faster, and build up combat power ashore more rapidly. The MV-22 will provide the operational capability to exploit gaps and rapidly insert assault forces while other aircraft systems allow penetration into hostile areas with less chance of detection by the enemy.

The AH-1Z

Soon after the turn of the century, the Marine Corps will receive the first deliveries of its new dedicated attack helicopter, the AH-1Z. Advertised as an upgrade to the AH-1W Cobra, the AH-1Z is a new aircraft with new technology.

This aircraft comes at a time when the need for an improved rotary-wing attack aircraft is greatest.

Additional blades, an increase in fuel-carrying capability, and an increase in airspeed mean a significant increase in combat radius over the current AH-1W. Other enhancements include a substantial increase in ordnance payload. The AH-1Z will carry 16 precision-guided munitions per aircraft with the ability to simultaneously carry air-to-air weapons (AIM-9). This wide array of ordnance will give the MAGTF commander the ability to tailor the ordnance load to the threat. An auxiliary power unit installed in the AH-1Z will give the aircraft an improved austere FOB/FARP operational capability. This will give the commander more flexibility as the helicopter will be more responsive and have more time on station. The addition of an integrated cockpit will reduce pilot workload and enhance the accuracy of ordnance delivery. The new AH-1Z will bridge the firepower capability gap between today's aircraft and the next generation aircraft.

The UH-1Y

Throughout the Marine Corps' aviation history, its leadership has always looked to get the most out of its acquisition dollar. Multi-mission or multi-role aircraft have been attractive for their usefulness in a variety of combat missions. No other aircraft exemplifies this more than the venerable UH-1 series of helicopters.

Around the year 2005, the Marine Corps is projected to receive its newest version of utility helicopter known as the UH-1Y. The UH-1Y is billed as an upgrade to the current UH-1N. Similar to the AH-1Z modernization effort, the upgrades for the UH-1Y are to include a four-bladed all composite, hingeless, bearingless rotor system and new drive train components. These improvements will increase payload by 44 percent and airspeed by 32 percent. In addition to the improved dynamic components, the UH-1Y will receive an integrated glass cockpit. This cockpit is planned to include digital communications, an upgraded survivability suite and moving map display. Most of these systems will be accessible via "hands-on controls" actuation. The result will be a cockpit management system that allows pilots the ability to focus more attention toward mission accomplishment and less on routine cockpit duties. This improved airframe will be on the cutting edge of new technology and lead the way in filling the Marine Corps requirement for a utility helicopter.

The KC-130J

Providing substantial lift, inflight refueling, and logistical resupply will be a challenge in an OMFTS environment. The aging fleet of KC-130 series aircraft has been up to the challenge in the past. Unfortunately, much like the CH-46E, the current F and R models are in need of relief as their service life reaches the 40-year mark.

In most respects, the aircraft has changed little since its inception in the 1950's. The J model looks almost exactly the same as older KC-130 models, but it has updated avionics and engines, and a reduced crew requirement. The J model's engine upgrade is the most significant change to the aircraft.

The increased performance of the engines means that the aircraft will be able to haul more (fuel or cargo) farther, get there faster, and operate out of smaller airfields. The updated avionics suite will allow for better automated mission planning and communications software. The new command and control suite will enable the DASC (A) to better perform the mission. At the present time, refueling transfer rates (aerial and ground) will remain consistent with older KC-130 models. The planner's bottom line is that the aircraft will be a more capable force multiplier with longer, faster legs.

Joint Strike Fighter

The short takeoff and vertical landing joint strike fighter variant being designed for the U.S. Marine Corps and for the Royal Navy in Britain employs

a direct lift system for short takeoffs and vertical landings with uncompromising performance. Features of this envisioned aircraft are—

- A 30- to 36- foot wingspan with no wing folds.
- Internal and external payload capability.
- Supersonic flight.
- Precise weapons delivery through the integration of onboard avionics and external data systems.
- All-weather ordnance delivery.
- Reduced radar signature through the use of advanced reduced observable design.
- Increased pilot situational awareness through improved sensor and avionics integration.
- Aircraft readiness enhanced by self-diagnostic systems onboard.
- Multiple service use emphasizing common parts, shared supply systems, and joint repair facilities. These measures should keep costs down.

Common Aviation Command and Control System

Currently the MACCS exists to provide the ACE commander the ability to control aircraft and exploit opportunities on the battlefield. The MACCS can provide the commander a real-time picture of the battlespace. Additionally, the MACCS provides the commander the means to plan future tactical air operations and to employ all six functions of Marine aviation to their fullest extent.

The common aviation command and control system (CAC2S) will integrate the functionality of all current MACCS agencies. It will replace the major pieces of communications equipment of the TACC, TAOC, DASC, and airborne DASC, air traffic control detachment (ATC), and the command and control of the low altitude air defense (LAAD) battalion. CAC2S will allow the ACE to consolidate C2 functions at a single facility significantly reducing the logistical footprint of the existing MACCS.

CAC2S hardware will be modular and capable of being assembled in a variety of configurations, including shipboard operations, to meet MAGTF requirements. Plans include airborne operations in a variety of current and future Marine Corps aircraft.

During amphibious operations, the system will interface with a host ship. The system's communication keeps the commander appraised of the tactical situation while moving to the objective area. The commander will be able to conduct mission planning using the system. The commander will maintain situational awareness during operations and a common air picture regardless of location.

This system will be compatible with other Services command and control systems. If the MAGTF is the first unit deployed to the region, the MAGTF commander could remain in control of the JTF, and the ACE commander could retain the overall command of the aviation assets as acting joint force air component commander. Leaders with the greatest situational awareness can retain command of the joint operation.

Appendix A

Aircraft Capabilities Guide

This ready reference of MAGTF aircraft may be referenced for initial operational planning only. Aircraft performance is affected by many variables such as temperature, atmospheric pressure, humidity, wind, aircraft configuration, and mission requirements. Specific performance parameters are calculated for every mission. Detailed mission planning requires close liaison with the ACE and use of appropriate operations and tactical manuals.

CH-46E

Dimensions

Height .....16 feet 8 inches
Weight.....16,5000 pounds (empty)
24,300 pounds (maximum gross weight)
Rotor Diameter .....51 feet
Length .....84 feet 4 inches

Airspeed

Maximum endurance ..... 70 KIAS
Maximum range..... 110 to 130 KIAS
Maximum airspeed ..... 145 KIAS

Fuel Capacity

Pounds.....4,488
Gallons.....660

Endurance

Payloads..... 4,300 pounds
18 pax
Endurance .....2 + 55 hours

Weapons Systems

Guns.....2 X 50 caliber XM 218

Other Systems

GPS navigation .....Miniature Airborne GPS Receiver (MAGR) System (Communications/Navigation Control System [CNCS] configured A/C only)

Communications Equipment

HF ..... 1 X AN/ARC-94
VHF/UHF .....1 X AN/ARC-182 w/KY-58 encryption device
UHF..... 1 X AN/ARC-51A w/KY-58 encryption device
VHF/UHF .....1 X AN/ARC-210 w/KY-58 encryption device (CNCS configured A/C only)

Aircraft Survivability Equipment

RWR .....AN/APR-39(V)1 radar warning receiver
IRCW ..... AN/ALQ-157 infrared jammer
Expendables .....AN/ALE-39 countermeasures dispenser
Missile warning..... AN/AAR-47 missile warning system

CH-53

CH-53D

Dimensions
Height ..... 24 feet 11 inches
Empty weight ..... 27,000 pounds
Rotor diameter ..... 72 feet 3 inches
Length ..... 88 feet 6 inches
Maximum gross weight ..... 42,000 pounds

Airspeed
Maximum endurance ..... 70 KIAS
Maximum airspeed ..... 130 KIAS

Fuel Capacity
Pounds 13,178
Gallons 1,938

Endurance
Payload ..... 37 pax
8,000 pounds internal
Typical ..... 3 + 00 hours
Best case ..... 5 + 30 hours

Weapons Systems
Guns ..... 2 X 50 caliber XM 218

Other Systems
none

Communications Equipment
HF ..... 1 X AN/ARC-94 or AN/ARC-174
UHF/VHF ..... 2 X AN/ARC-182 w/KY-58 encryption device or 2 X AN/ARC-210 w/KY-58 encryption device

Aircraft Survivability Equipment
RWR ..... AN/APR-39(V)1 radar warning receiver
IRCM AN/ALQ-157
Missile warning ..... AN/AAR-47 missile warning system

CH-53E

Dimensions
Height ..... 28 feet 4 inches
Empty weight ..... 36,000 pounds
Rotor diameter ..... 79 feet
Length ..... 99 feet 1/2 inch
Maximum gross weight ..... 73,500 pounds

Airspeed
Maximum endurance ..... 5 KIAS
Maximum airspeed ..... 150 KIAS

Fuel Capacity
Pounds 15,000
Gallons 2,277

Endurance
Payload ..... 37 to 55 pax
20,000 pounds internal
Typical ..... 4 + 00 hours
Best case ..... Indefinite with AR

Weapons Systems
Same as CH-53D

Other Systems
FLIR AN/AAQ-16B

Communications Equipment
Same as CH-53D

Aircraft Survivability Equipment
RWR ..... same as CH-53D
IRCM ..... none
Missile warning ..... same as CH-53D

UH-IN

Dimensions

Height ..... 13 feet 1 inch
Weight..... 6,900 pounds (empty); 10,5000 pounds (maximum gross weight)
Rotor diameter ..... 48 feet
Length ..... 57 feet 4 inches
Fuselage width ..... 9 feet 4.5 inches

Airspeed

Maximum endurance ..... 55 to 65 KIAS
Maximum airspeed ..... 130 KIAS

Fuel Capacity

Pounds..... 1,329.5 internal; 1,020 additional w/auxiliary fuel cells (2 maximum)
Gallons..... 195.5; 150 additional w/auxiliary fuel cells (2 maximum)

Endurance

Best case ..... 1 + 30 (internal fuel only; 1,300 pounds gear/ordnance/pax)
2 + 20 (1/2 auxiliary fuel cell; 900 pounds gear/ordnance/pax)
3 + 10 (full auxiliary fuel cell; 400 pounds gear/ordnance/pax)
Worst case..... 1 + 15 (internal fuel only; 1,300 pounds gear/ordnance/pax)
2 + 00 (1/2 auxiliary fuel cell; 900 pounds gear/ordnance/pax)
2 + 45 (full auxiliary fuel cell; 400 pounds gear/ordnance/pax)

Weapons Systems

Guns..... 7.62mm M2A0E
7.62mm GAU-17
50 caliber GAU-16
Rockets ..... 2.75 inch rockets, WAFFAR
Typical mix: CAS ..... (14) 2.75 inch rockets, GAU-16/GAU-17

Other Systems

GPS navigation ..... Doppler GPS Navigation System (CDNU configured A/C only)
FLIR..... AN/AAQ-22 Navigation FLIR with LASER range finder and VCR
Miscellaneous ..... loudspeaker for PSYOPS missions; AN/ULQ communications jamming package

Communications Equipment

VHF/UHF ..... 3 X AN/ARC-210 w/KY-58 encryption device (SATCOM available on one radio only)
UHF..... 1 X AN/ARC-182 w/KY-58 encryption device
UHF..... 1 X AN/ARC-159 w/KY-58 encryption device
VHF..... 1 X AN/ARC-114 w/KY-58 encryption device
Miscellaneous ..... ASC-26 communication package provides 1 X UHF and 2 X VHF radios for airborne command and control

Aircraft Survivability Equipment

RWR ..... AN/APR-39 radar warning receiver
AN/APR-44 CW radar warning receiver
IRCM AN/ALQ-144
Expendables ..... AN/ALE-39 countermeasures dispenser
Missile warning..... AN/AAR-47 missile warning system
Laser warning..... AN/AVR-2

AH-1W

Dimensions

Height ..... 13 feet 9 inches
Weight ..... 10,5000 pounds (empty)
14,750 pounds (maximum gross weight)
Rotor diameter ..... 48 feet
Length ..... 58 feet
Fuselage width ..... 3 feet 7 inches

Airspeed

Maximum endurance ..... 72 KIAS
Maximum speed ..... 190 KIAS
170 KIAS (w/wing stores)

Fuel Capacity

Pounds 2,037
Gallons 304

Endurance

Payload ..... 2,250 pounds (in addition to full internal fuel)
Typical ..... 2.3 hours
Best case ..... 2.6 hours
4.6 hours (with 2 auxiliary fuel tanks)
Worst case ..... 1.8 hours
3.6 hours (with 2 auxiliary fuel tanks)

Weapons Systems

Missiles ..... BGM-71 A/A-1/C/D/E/E-5B TOW
AGM-114A/B/C/K Hellfire
AGM-122A Sidearm
AIM-9L/M Sidewinder
Guns ..... 20mm turret (+110 AZM, +30 elevation -50°)
20mm ammo (MK 50 series, PGU 27/28/31 series)
Rockets ..... LAU-61/68 2.75 inch rockets, 7 or 19 shot pod
LAU-10, 5 inch rocket, 4 shot pod

Typical mix:
AAW ..... 2 X AIM-9, 2.75 inch flechette, 20mm gun
OAS ..... Hellfire, TOW, 5 inch rockets, internal gun
Armed RECCE ..... Hellfire, TOW, 2.75 inch rockets, internal gun (Sidearm)
Escort ..... Sidewinder, 2.75 inch RP/HE, internal gun, TOW/Hellfire
FAC(A) ..... Hellfire, TOW, 2.75 inch RP, internal gun

Other Systems

GPS navigation ..... Embedded GPS/INS (1686 upgrade)
FLIR ..... Night Targeting System
Laser ..... Pulsed, 1064 nm, neodymiun: YAG; laser designator and ranging system
CCTV ..... TV camera
VCR ..... SVHS and VHS recording capability
Optics ..... Direct view optics

Communications Equipment

VHF/UHF ..... 2 X AN/ARC-182 w/KY-58 encryption device
VHF/UHF ..... 2 X AN/ARC-210 w/KY-58 encryption device (1686 upgrade only)

Aircraft Survivability Equipment

RWR ..... AN/APR-39V(1) radar warning receiver (pulsed)
AN/APR-44 radar warning receiver (CW)
IRCM AN/ALQ-144
Expendables ..... AN/ALE-39 countermeasures dispenser

AV-8B

Models.....AV-8B Day Attack (DMT);
AV-8B Night Attack (NVD/FLIR);
AV-8B II + RADAR

Dimensions

Height .....11 feet 8 inches
Weight.....4,600 pounds (empty)
39,000 pounds mixed gross weight
Wingspan .....30 feet 3 inches

Airspeed

Maximum endurance ..... 230 KIAS
Maximum airspeed ..... 585 KCAS/1.0 IMN

Fuel Capacity

Pounds.....7,759 internal
11,749 with 2 external drop tanks
830 with 4 external drop tanks

Endurance..... Varies significantly with ordnance load and mission profile. Refer to NWP 3-22.5-AV8B, Vol I for specific weapons load profiles

Hi Lo Hi profile with 6 Mk 82, DECM, and gun ..... Combat radius 170 nm loiter time 25 minutes

Lo Lo Lo profile with 6 Mk 82, DECM, and gun ..... Combat radius 80 nm loiter time 15 minutes

Weapons Systems

Guns ..... GAU-12 25mm gun
Rockets.....2.75 and 5 inch HE-Frag, AT/APERS
HEGP, WP, RP, ILLUM, and chaff
Bombs .....Mk 81, Mk 82, Mk 83
Mk 20 Rockeye, MK 77 Napalm
GBU-12, GBU-16 LGB
CBU-72 FAE, CBU-78 Gator
Missiles ..... AGM-65E Laser Maverick
AGM-65F IR Maverick (night attack only)
AGM-122 Sidearm
AIM-9 Sidewinder
Miscellaneous ..... LUU-2A/B Illuminum flares, Mk 58 Marine Location Marker

Other Systems

GPS navigation .....Integrated P-coded GPS targeting system
FLIR.....1 power navigation FLIR
Dual mode tracker.....laser spot tracker with 6 power TV video
Camera ..... VTR HUD/dual-mode tracker recorder

Communications Equipment

VHF/UHF .....2 X RT-1250A/ARC with KY-58 encryption device

Aircraft Survivability Equipment

RWR ..... AN/ALR-67 radar warning receiver
DECM..... AN/ALQ-164 DECM system
Expendables .....AN/ALE-39 countermeasures dispenser

F/A-18 (Models A/C/D)

Dimensions

Height..... 15 feet 3 inches
Weight..... 24,500 pounds (empty)
51,900 pounds (maximum T/O)
Wingspan ..... 40 feet 5 inches

Airspeed

Maximum endurance.....250 KIAS (approximate)
Maximum airspeed.....750 KIAS (NATOPS)
650 KIAS (sea level)

Fuel Capacity

Pounds.....12,800 (10,800 internal, 2,000 centerline tank)
Gallons .....1,900 (1,500 internal, 400 centerline tank)

Endurance

Typical ..... 1 + 30 hours
Best case..... 2 + 45 hours
Worst case .....12 minutes
Hi Hi Hi profile with centerline tank ..... 2 + 45 hours

Weapons Systems

Guns .....20mm internal gun
Rockets.....LAU-10 (5 inch rockets)
LAU-51 (2.75 inch rockets)
LAU-61 (2.75 (2.75 inch rockets)
Radar ..... APG-65 multimode radar
Missiles .....AGM-65E Laser Maverick
AGM-65F IR Maverick
AGM-88 Harm
Walleye I/II
AIM-7 Sparrow
AIM-9 Sidewinder
Bombs..... Mk 80 series
Mk 20 Rockeye, GBU-10/12/16
CBU-59 APAM
CBU-78 Gator, Mk 77 Napalm
Mk 36, Mk 40, Mk 4 (Destructors)
Mk 52, Mk 55, Mk 56 (Bottom/Moored Mines)
Mk 62, Mk 63, Mk 64, Mk 65 (Quickstrike Mines)
Miscellaneous..... Tactical air-launch decoy
Typical mix:
Air-to-air.....2 AIM-9, 2 to 4 AIM-7, 6 second 20mm
Air-to-ground ..... 4 to 8 Mk 82 or 2 to 4 Mk 83
2 AIM-9, 2 AIM-7

Other Systems

FLIR ..... AN/AAS-38 target FLIR
AN/AAR-50 navigation FLIR (F/A-18C/D only
Laser ..... AN/AS-1 73 laser spot tracker
On-board recording ..... HUD recorder, DDI selectable
AN/ASQ-1 73 35mm strike camera

Communications Equipment

VHF/UHF.....2 X AN/ARC-182 w/KY-58 encryption device

Aircraft Survivability Equipment

RWR.....AN/ALR-67 radar warning receiver
DECM .....2 X ALQ-126B
AN/ALQ-167 (tactical contingency pod)
Expendables ..... AN/ALE-39 countermeasures dispenser

EA-6B ICAP 2

Dimensions
Height .....16 feet 8 inches
Weight.....34,000 pounds (empty)
61,500 pounds (maximum T/O)
Wingspan .....53 feet

Airspeed
Maximum endurance .....53 to .55 IMN, aircraft configuration dependent
Maximum airspeed ..... 86 IMN (TJS pod limitation)
Minimum airspeed.....114 KIAS (minimum approach speed)
220 KIAS (TJS pod operation)

Fuel Capacity
Pounds..... 25,400 total; 15,400 internal, 10,000 external
Gallons..... 3,768 total; 2,268 internal, 1,500 external

Endurance.....Varies greatly depending on aircraft configuration and mission profile; typical pod and external fuel load will result in approximately 1 hour and 45 minutes loiter without AR
Hi Lo Lo Hi profile with
4 X TJS pods..... 425 nm mission radius

Weapons Systems
Jammers ..... 5 X AN/ALQ-99 tactical jamming pods
Radars ..... AN/APS-130 ground mapping radar
Missiles .....AGM-88 HARM
Miscellaneous .....AN/ALE-41 and 43 corridor chaff pod
AN/ALQ-99 on-board receiver system
Typical mix: .....Load based on enemy order of battle and threat; typical load will be 3 to 4 tactical jamming pods, 1 to 2 AGM-88 or external fuel tanks

Other Systems
On-board recording..... AN/ALQ-99 on-board/ tactical jamming system recorder
Miscellaneous ..... UHF/VHF, AM/FM regency scanner
USQ-113 Communications jammer

Communications Equipment
HF ..... 1 X AN/ARC-105
VHF..... 1 X AN/ARC-175
UHF.....2 X AN/ARC-159 w/KY-58 encryption devices

Aircraft Survivability Equipment
RWR .....None
DECM .....2 X ALQ-167 tactical contingency pod (training only)
Expendables .....AN/ALE-39 countermeasures dispenser

KC-130 (Models F/R/T)

Dimensions

Height..... 38 feet 4 inches
Weight..... 90,000 pounds (empty)
Maximum gross weight .... 155,000 pounds (SLEP)
135,000 pounds (non-SLEP)
Length ..... 97 feet 9 inches
Wingspan ..... 132 feet 7 inches

Airspeed

Maximum endurance ..... 240 KIAS
Maximum airspeed ..... 350 KIAS

Fuel Capacity

Takeoff fuel KC-130F .....41,406 cargo
65,831 tanker
KC-130R/T .....59,606 cargo
84,032 tanker

Endurance

Typical .....13 hours

Aircraft Survivability Equipment

ALQ-157
AAR-47
ALE-139, APR-39*
Night vision lighting*

**Only specially configured aircraft*

Air Delivery of Cargo and Personnel

Container delivery system .....Up to 16 bundles; 37,248 pounds
Military free fall.....64 jumpers
Heavy equipment .....Vehicles, ammo, cargo (42,000 pounds)
Personnel staticline .....64 jumpers

Short Unimproved Airfield Operations

Size and strength of runway are performance/ weight dependent. Standard is 3,500 feet by 60 feet.

Mission Profiles

DASC(A) capable, radio relay, battlefield illumination

Rapid Ground Refueling Flow Rates (pounds per minute)

Model	Point	IFR drogue	SPR panel	Pod
AH-1W	1	59	34	49
	2	54	29	44
CH-46	1	79	44	59
	2	69	35	49
CH-53	1	66	40	56
	2	56	31	46

Communications Equipment

VHF/VOR..... 2 X AN/AR126
UHF .....2 X AN/ARC-159(V)1
HF ..... 2 X AN/ARC-190
SATCOM*
DASC suite.....AN/UYQ-3A

**Some aircraft are configured to operate these systems*

Other Systems

Radar.....AN/APS 133 (weather, ground, beacon IFF capable) INS
GPS*
Celestial Navigation*

**Some aircraft are configured to operate these systems*

Air Land Delivery of Cargo and Personnel

Cargo-configured Airframe

Passengers	Pallets	Troops
0	6	0
92	1	76
72	2	44
52	3	33
41	4	32
24	5	16

70 litters with 6 attendants
74 litters with 2 attendants

Tanker-configured Airframe

Passengers	Pallets
40	1
24	2

Aerial Refueling Transfer Rates
(JP-5 at Standard Daytime Temperature)

	1 receiver (pounds per minute)	2 receivers (pounds per minute)
F cargo	980	490
R or T cargo	1,020	510
F tanker	2,040	2,040
R or T tanker	2,040	2,040

MV-22

The MV-22 aircraft provides a worldwide self-deploying capability (2,100 nautical miles with inflight refueling). It also provides modern avionics that will improve joint interoperability by providing the capability to transmit, receive, and display information to and from aircraft, ground units, or other Services.

Length ..... 57 feet 4 inches
Width ..... 84 feet 7 inches
Height..... 22 feet 1 inch

Troop capacity ..... 24 combat-equipped troops
External capability ..... 10,000 pounds
Cruise airspeed ..... 230 kts; 130 kts w/external load

Scenario	Cruise Airspeed	Combat Radius
24 combat-equipped Marines	230 kts	272.9 nm
10,000 pound internal load	230 kts	270 nm
8,000 pound external load (HUMMV)	130 kts	105 nm

Appendix B

Assault Support Request Form

Instructions to Complete

Block	Title and Elements	Explanation
	Section I. Mission Request	
1.	UNIT CALLED	Identifies the unit designation/call sign/preassigned number.
	THIS IS	Identifies the request originator by unit designator/call sign/preassigned number.
	REQUEST NUMBER	For preplanned missions, indicates the originator's request number in series. For immediate missions, this number is assigned by the DASC.
	SENT	Indicates the time and individual who transmitted the request.
2.	REQUEST FOR	Indicates whether request is for helicopter or fixed-wing support.
3.	MISSION CATEGORIES	
	PREPLANNED: A. Precedence B. Priority	For *preplanned* requests, enter precedence (block A) and priority (block B). Precedence is stated numerically in descending order of importance, as determined by the requestor. Priority is expressed as shown below.
	IMMEDIATE: C. Priority	For *immediate* requests, enter priority (block C). A precedence entry is not required for immediate requests because, by definition, all immediate requests are precedence #1.
		Use the numerical designation below to determine priority (e.g., define the tactical situation) for preplanned (block B) or immediate (block C).

Block	Title and Elements	Explanation
		1. Emergency. Missions which require immediate action and supersede all other categories of mission priority. 2. Priority. Missions which require immediate action and supersede routine missions. For medical evacuation (MEDEVAC), use this category for patients who require specialized treatment not available locally and who are liable to suffer unnecessary pain or disability unless evacuated with the least possible delay. 3. Routine. Missions which do not demand urgency in execution. For MEDEVAC, use this category for patients who can be treated locally, but whose prognosis would benefit by evacuation with the least possible delay. 4. Urgent. (for MEDEVAC only). Evacuation of critically wounded, injured, or ill personnel whose immediate evacuation is a matter of life or death.
	RECEIVED	Indicates the time and individual who received the request.
4.	TYPE MISSION	Indicates whether the mission is tactical or administrative.
5.	MISSION IS	Describes the mission to be performed. Check appropriate blocks 1 through 12 to identify the mission to be performed. If block 12 (Remarks) is checked, enter an explanation.
6.	PAYLOAD IS	Describes the type and approximate amount of the payload to be transported. It is necessary to specify, even if a rough estimate, the number of troops. Otherwise ACE planner cannot determine what *force* is required—aircraft type/number. For internal cargo, include the dimensions of the largest item to be moved. For MEDEVAC, indicate number of casualties in block 6A.
7.	INSTRUCTIONS	Indicates the time/coordinates of the PZ and DZ.
8.	LZ DESCRIPTION	Contains detailed information on the LZ.

Block	Title and Elements	Explanation
9.	LZ WILL BE A. Unmarked B. Marked	Indicates if the LZ will be unmarked or marked. If the LZ will be marked, indicate the color.
10.	LZ MARKED WITH	Identifies the type LZ marking.
11.	COMMUNICATIONS	Identifies the call sign and frequency of PZ and DZ controllers.
12.	REMARKS	Allows the requestor to add other essential information not provided for in the request format. For MEDEVAC, include type casualties/wounds, litter, ambulatory status, medical attendant requirements, or any other special considerations. If possible, medical personnel should provide a medical regulating code (MRC):

MC	Pediatrics	SS	General Surgery
MM	Internal Medicine	SSC	Thoracic Surgery
NP	Psychiatry	SSM	Maxillofacial Surgery
SB	Burns	SSN	Neurosurgery
SC	Spinal Cord Injury	SSO	Opthamology Injury
SG	OB/GYN	SSU	Urology
SO	Orthopedic Surgery		

	ACKNOWLEDGED Bn/regt Division Other	Indicates that the request has been copied for concurrence by the GCE.

Section II. Coordination

13.	NSFS	Naval surface fire support coordination.
14.	ARTILLERY	Artillery coordination.
15.	AIO/G-2/G-3	Air Intelligence Officer, G-2, G-3 coordination.
16.	ESCORT/AERIAL REFUELING	Indicates if escort or aerial refueling support is required for the mission. Block A indicates support has been requested. Block B indicates TACC has assigned assets. After assets are assigned, the TACC enters the rest of the data.

Block	Title and Elements	Explanation
17.	REQUEST A. Approved B. Disapproved	Indicates the approval or disapproval of the request.
18.	BY	Indicates the individual who approved or disapproved the request.
19.	REASON FOR DISAPPROVAL	Self-explanatory.
20.	RESTRICTIVE FIRE/ AIR PLAN A. Is Not B. Number	The restrictive fire/air plan refers to the airspace coordination area (ACA). An ACA is a three-dimensional block of airspace where friendly aircraft are reasonably safe from friendly surface fires. A plan number or code name is issued, as appropriate.
21.	IS IN EFFECT A. From Time _____ B. To Time _____	Establishes the time period that the ACA plan will be in effect.
22.	LOCATION A. From Coordinates_____ B. To Coordinates_____	Grid coordinates of the start/end points of the ACA centerline.
23.	WIDTH (METERS)	Defines the ACA from either side of centerline.
24.	ALTITUDE/VERTEX A. Max/Vertex_____ B. Minimum_____	ACA in feet above mean sea level. Use block A for VERTEX only.

Section III. Mission Data

25.	MISSION NUMBER	Indicates mission number.
26.	CALL SIGN	Flight call sign of mission aircraft.
27.	NO/TYPE AIRCRAFT	Self-explanatory.
28.	EST/ACT TAKEOFF	Estimated or actual time the mission aircraft will take off.

Block	Title and Elements	Explanation
29.	ETA/ATA	Estimated or actual time of arrival of the mission aircraft in the objective area.
30.	MISSION CANCELLED/ DIVERTED	Indicates if mission is cancelled or diverted. By_____ indicates the individual/agency/unit who cancelled or diverted the mission.
31.	TERMINATE REQUEST	Indicates conditions under which to terminate the request.
32.	MISSION RESULTS	Self-explanatory, include pilot reports.

ASSAULT SUPPORT REQUEST FORM

SECTION I — MISSION REQUEST

DATE

1. UNIT CALLED | THIS IS | REQUEST NUMBER | SENT

2. REQUEST FOR
A. q HELICOPTER
B. q FIXED-WING

3. MISSION CATEGORIES
A. q PREPLANNED: PRECEDENCE _____
B. q PRIORITY _____
C. q IMMEDIATE: PRIORITY _____

4. TYPE MISSION
A. q TACTICAL
B. q ADMINISTRATIVE

TIME | BY
RECEIVED
TIME | BY

5. MISSION IS
A. q ASSAULT TRANSPORT
B. q LOGISTICAL SUPPORT
C. q AIR EVACUATION
D. q MEDEVAC
E. q AERIAL DELIVERY
F. q C2
G. q TRAP
H. q SAR
I. q ILLUMINATION
J. q SPECIAL OPS
K. q OTHER _____

6. PAYLOAD IS
A. q TROOPS _____
B. q EXTERNAL CARGO (WT) _____
C. q INTERNAL CARGO (WT/CU) _____
LARGEST ITEM (LxWxH) _____

7. INSTRUCTIONS

	PICKUP TIME	COORDINATES	LZ TIME	COORDINATES
A.	_____	_____	_____	_____
B.	_____	_____	_____	_____
C.	_____	_____	_____	_____
D.	_____	_____	_____	_____

8. LZ DESCRIPTION
A. WIND DIRECTION/VELOCITY _____
B. ELEVATION _____ (FT MSL)
C. SIZE _____
D. OBSTACLES _____
E. FRIENDLY POS _____ DIR/DIST _____/_____
F. ENEMY POS _____ DIR/DIST _____/_____
G. LAST FIRE RECEIVED TIME/TYPE _____/_____ DIR/DIST _____/_____

9. LZ WILL BE
A. q UNMARKED
B. q MARKED WITH COLOR _____

10. LZ MARKED WITH
A. q PANELS B. q SMOKE C. q FLARES
D. q MIRROR E. q LIGHTS F. q NAVAID G. q OTHER

11. COMMUNICATIONS
A. PICKUP ZONE CALL SIGN _____/FREQUENCY (COLOR CODE) _____
B. LZ CALL SIGN _____/FREQUENCY (COLOR CODE)_____

12. REMARKS

ACKNOWLEDGED
BN/REGT
DIVISION
OTHER

SECTION II — COORDINATION

13. MSFS | 14. ARTILLERY | 15. AIO/G-2/G-3

16. ESCORT/AERIAL REFUELING
A. q REQUESTED B. q ASSIGNED
C. NO/TYPE A/C _____ D. CALL SIGN _____
E. COMMUNICATIONS_____ F. ARMAMENT _____

17. REQUEST
q APPROVED q DISAPPROVED

18. BY:

19. REASON FOR DISAPPROVAL

20. RESTRICTIVE FIRE/AIR PLAN
A. q IS NOT B. q NUMBER

21. IS IN EFFECT
A. q (FROM TIME) _____ B. q (TO TIME) _____

22. LOCATION
A. q _____ (FROM COORDINATES)
B. q _____ (TO COORDINATES)

23. WIDTH (METERS)

24. ALTITUDE/VERTEX
A. q _____ MAX/VERTEX
B. q _____ MINIMUM

SECTION III — MISSION DATA

25. MISSION NUMBER | 26. CALL SIGN | 27. NO/TYPE AIRCRAFT

28. EST/ACT TAKEOFF | 29. ETA/ATA

30. MISSION CANCELLED/DIVERTED
A. q CANCELLED B. q DIVERTED BY: _____

31. TERMINATE REQUEST
A. q GO/NO GO DTG _____ B. q WHEN COMPLETED _____

32. MISSION RESULTS
A. q COMPLETE
B. q INCOMPLETE
C. q OTHER _____

ACKNOWLEDGE

	TACC		TADC
	FSCC		SACC
	DASC		HDC
	TACP		TACLOG

ASSAULT SUPPORT REQUEST FORM

SECTION I — MISSION REQUEST

DATE

1. UNIT CALLED | THIS IS | REQUEST NUMBER | SENT

2. REQUEST FOR
A. q HELICOPTER
B. q FIXED-WING

3. MISSION CATEGORIES
A. q PREPLANNED: PRECEDENCE _____
B. q PRIORITY _____
C. q IMMEDIATE: PRECEDENCE _____

4. TYPE MISSION
A. q TACTICAL
B . q ADMINISTRATIVE

TIME | BY

5. MISSION IS
A. q ASSAULT TRANSPORT
B. q LOGISTICAL SUPPORT
C . q AIR EVACUATION
D . q MEDEVAC
E. q AERIAL DELIVERY
F. q C2
G. q TRAP
H. q SAR
I. q ILLUMINATION
J. q SPECIAL OPS
K. q OTHER _____

6. PAYLOAD IS
A. q TROOPS _____
B. q EXTERNAL CARGO (WT) _____
C . q INTERNAL CARGO (WT/CU) _____
LARGEST ITEM (LxWxH) _____

7. INSTRUCTIONS

	PICKUP TIME	COORDINATES	LZ TIME	COORDINATES
A.	_____	_____	_____	_____
B.	_____	_____	_____	_____
C.	_____	_____	_____	_____
D.	_____	_____	_____	_____

8. LZ DESCRIPTION
A. WIND DIRECTION/VELOCITY _____
B. ELEVATION _____ (FT MSL)
C. SIZE _____
D. OBSTACLES _____
E. FRIENDLY POS _____
DIR/DIST _____/_____
F. ENEMY POS _____
DIR/DIST _____/_____
G. LAST FIRE RECEIVED TIME/TYPE _____/_____
DIR/DIST _____/_____

9. LZ WILL BE
A. q UNMARKED
B. q MARKED WITH COLOR _____

10. LZ MARKED WITH
A. q PANELS
B. q SMOKE
C. q FLARES
D. q MIRROR
E. q LIGHTS
F. q NAVAID
G. q OTHER

11. COMMUNICATIONS
A. PICKUP ZONE CALL SIGN _____/FREQUENCY (COLOR CODE) _____
B. LZ CALL SIGN _____/FREQUENCY (COLOR CODE)_____

12. REMARKS

ACKNOWLEDGE
BN/REGT
DIVISION
OTHER

SECTION II — COORDINATION

13. MSFS

16. ESCORT/AERIAL REFUELING
A. q REQUESTED
B. q ASSIGNED
C. NO/TYPE A/C _____
18. BY _____
D. CALL SIGN _____
E. COMMUNICATIONS_____
F. ARMAMENT _____

17. REQUEST
q APPROVED q DISAPPROVED

19. REASON FOR DISAPPROVAL

20. RESTRICTIVE FIRE/AIR PLAN
A. q IS NOT
B. q NUMBER

21. IS IN EFFECT
A. q (FROM TIME) _____
B. q (TO TIME) _____

22. LOCATION
A. q _____ (FROM COORDINATES)
B. q _____ (TO COORDINATES)

23. WIDTH (METERS)

24. ALTITUDE/VERTEX
A. q _____ MAX/VERTEX
B. q _____ MINIMUM

SECTION III — MISSION DATA

25. MISSION NUMBER | 26. CALL SIGN | 27. NO/TYPE AIRCRAFT

28. EST/ACT TAKEOFF | 29. ETA/ATA

30. MISSION CANCELLED/DIVERTEDA. q CANCELLED B. q DIVERTED BY: _____

31. TERMINATE REQUEST A. q GO/NO GO DTG _____ B. q WHEN COMPLETED _____

32. MISSION RESULSTS
A. q COMPLETE
B. q INCOMPLETE
C. q OTHER _____

ACKNOWLEDGE

ASSAULT SUPPORT REQUEST FORM														
SECTION I–MISSION REQUEST											DATE			
1. UNIT CALLED			THIS IS			REQUEST NUMBER					SENT			
											TIME		BY	
2. REQUEST FOR A. q HELICOPTER B. q FIXED-WING														
3. MISSION CATEGORIES											RECEIVED			
A. q PREPLANNED: PRECEDENCE_____ B. q PRIORITY_____														
C. q IMMEDIATE: PRIORITY _____														
4. MISSION TYPE A. q TACTICAL B. q ADMINISTRATIVE														
5. MISSION IS														
A. q ASSAULT TRANSPORT B. q LOGISTICAL SUPPORT C. q AIR EVACUATION D. q MEDEVAC														
E. q AERIAL DELIVERY F. q C2 G. q TRAP H. q SAR														
I. q ILLUMINATION J. q SPECIAL OPS K. q OTHER _____														
6. PAYLOAD IS														
A. q TROOPS _____ B. q EXTERNAL CARGO/WT _____														
C. q INTERNAL CARGO WT/CU _____ LARGEST ITEM (LxWxH) _____														

Appendix C

Glossary

Section I. Acronyms and Abbreviations

AAA ..... antiaircraft artillery
AAAV ..... advanced amphibious assault vehicle
AAW ..... antiair warfare
ABF ..... attack by fire position
ACA ..... airspace coordination area
ACE ..... aviation combat element
AIO ..... air intelligence officer
AMC ..... air mission commander
ARM ..... antiradiation missile
ASC(A) ..... assault support coordinator (airborne)
ASE ..... air support element
ASR ..... assault support request
ATC ..... air traffic control
ATF ..... amphibious task force
ATO ..... air tasking order
BDA ..... battle damage assessment
BP ..... battle position
CAC2S ..... common aviation command and control system
CAS ..... close air support
CATF ..... commander, amphibious task force
CE ..... command element
CH-46 ..... medium-assault transport aircraft (Sea Knight)
CH-53 ..... heavy-assault transport aircraft (Sea Stallion)
CLF ..... commander, landing force
CMC ..... Commandant of the Marine Corps
CNO ..... Chief of Naval Operations
COA ..... course of action
COC ..... combat operations center
COMINT ..... communications intelligence
CSAR ..... combat search and rescue
CSS ..... combat service support
CSSE ..... combat service support element
DAO ..... Defense Attache Office
DASC ..... direct air support center
DZ ..... drop zone
EA ..... electronic attack
EMCON ..... emission control
ES ..... electronic warfare support
EW ..... electronic warfare
FAC ..... forward air controller
FAC(A) ..... forward air controller (airborne)
FARP ..... forward arming and refueling point
FEBA ..... forward edge of the battle area
FFCC ..... force fires coordination center
FOB ..... forward operating base
FSCC ..... fire support coordination center
FSSG ..... force service support group
GCE ..... ground combat element
HA ..... humanitarian assistance
HARM ..... high-speed anti-radiation missile
HCS ..... helicopter coordination section
HDC ..... helicopter direction center
HERS ..... helicopter expeditionary refueling system
HMM ..... Marine medium helicopter squadron
HR ..... helicopter request
HST ..... helicopter support team
IPB ..... intelligence preparation of the battlespace
JATF ..... joint amphibious task force
JCS ..... Joint Chiefs of Staff
JFC ..... joint force commander
JTAR ..... joint tactical airstrike request
JTF ..... joint task force
KC-130 ..... aerial refueling/transport aircraft (Hercules)
LAAD ..... low altitude air defense
LCAC ..... landing craft air cushion
LOC ..... line of communications
LST ..... landing support team
LZ ..... landing zone
MACCS ..... Marine air command and control system
MACG ..... Marine air control group
MAGTF ..... Marine air-ground task force
MASS ..... Marine air support squadron
MBA ..... main battle area
MCCP ..... Marine Corps Capabilities Plan

MCO ..... Marine Corps order
MCWP ..... Marine Corps warfighting publication
MEDEVAC ..... medical evacuation
MEF ..... Marine expeditionary force
METT-T ..... mission, enemy, terrain and weather, troops and support available-time available
MEU ..... Marine expeditionary unit
MEU(SOC) ..... Marine expeditionary unit (special operations capable)
MOOTW ..... military operations other than war
MRC ..... medical regulating code
NATOPS ..... Naval Air Training and Operating Procedures Standardization
NEO ..... noncombatant evacuation operation
NSFS ..... naval surface fire support
NVD ..... night vision device
NWP ..... naval warfare publication
OAS ..... offensive air support
OMFTS ..... operational maneuver from the sea
OPSEC ..... operations security
PROVMAG ..... provisional Marine air group
PZ ..... pickup zone
RAO ..... rear area operations center
RAS ..... rear area security
RGR ..... rapid ground refueling
ROE ..... rules of engagement
SAAWC ..... sector antiair warfare coordinator
SAM ..... surface-to-air missile
SAR ..... search and rescue
SAW ..... surface-to-air weapon
SBF ..... support by fire position
SEAD ..... suppression of enemy air defenses
SOC ..... special operations capable
SOF ..... special operations forces
TAC(A) ..... tactical air coordinator (airborne)
TACC (Marine) ..... tactical air command center
TACC (Navy) ..... tactical air control center
TACP ..... tactical air control party
TADC ..... tactical air direction center
TAOC ..... tactical air operations center
TAR ..... tactical air request
TRAP ..... tactical recovery of aircraft and personnel
TTP ..... tactics, techniques, and procedures
UAV ..... unmanned aerial vehicle
UH-1 ..... assault utility helicopter (Iroquois, commonly called Huey)
U.S. ..... United States

Section II. Definitions

A

air defense—All defensive measures designed to destroy attacking enemy aircraft or missiles in the Earth's envelope of atmosphere, or to nullify or reduce the effectiveness of such attack. (Joint Pub 1-02)

air interdiction—Air operations conducted to destroy, neutralize, or delay the enemy's military potential before it can be brought to bear effectively against friendly forces at such distance from friendly forces that detailed integration of each air mission with the fire and movement of friendly forces is not required. (Joint Pub 1-02)

air reconnaissance—The acquisition of intelligence information by employing visual observation and/or sensors in air vehicles. (Joint Pub 1-02)

air superiority—That degree of dominance in the air battle of one force over another which permits the conduct of operations by the former and its related land, sea and air forces at a given time and place without prohibitive interference by the opposing force. (Joint Pub 1-02)

air threat levels—The conditions which relate to the enemy's air defense capability against airborne friendly aircraft. There are three levels of air threat:

a. low—An air threat environment which permits combat operations and support to proceed without prohibitive interference. Associated tactics and techniques do not normally require extraordinary measures for preplanned or immediate support.

b. medium—An air threat environment in which the specific aircraft performance and weapons system capability allow acceptable exposure time to enemy air defenses. This air threat environment restricts the flexibility of tactics in the immediate target/objective area. It is an environment in which the enemy may have limited radar and/or electro-optical acquisition capability at medium ranges, but the air defense system is not supported by fully integrated fire control systems.

c. high—An air threat environment created by an opposing force possessing air defense combat power including integrated fire control systems and electronic warfare capabilities which would seriously diminish the ability of friendly forces to provide necessary air support. This air threat environment might preclude missions such as immediate close air support, as the requirement for effective radio communications and coordination may not be possible. (MCRP 5-12C)

antiair warfare—A US Navy/US Marine Corps term used to indicate that action required to destroy or reduce to an acceptable level the enemy air and missile threat. It includes such measures as the use of interceptors, bombers, antiaircraft guns, surface-to-air and air-to-air missiles, electronic attack, and destruction of the air or missile threat both before and after it is launched. Other measures which are taken to minimize the effects of hostile air action are cover, concealment, dispersion, deception (including electronic), and mobility. (Joint Pub 1-02)

armed reconnaissance—A mission with the primary purpose of locating and attacking targets of opportunity, i.e., enemy materiel, personnel, and facilities, in assigned general areas or along assigned ground communications routes, and not for the purpose of attacking specific briefed targets. (Joint Pub 1-02)

assault support—The use of aircraft to provide tactical mobility and logistic support for the MAGTF, the movement of high priority cargo and personnel within the immediate area of operations, in-flight refueling, and the evacuation of personnel and cargo. (MCRP 5-12C)

assault support coordinator (airborne)—An aviator who coordinates, from an aircraft, the movement of aviation assets during assault support operations. Also called ASC(A). Formerly

referred to as helicopter coordinator (airborne) or HC(A). (MCRP 5-12C).

C

close air support—Air action by fixed and rotary-wing aircraft against hostile targets which are in close proximity to friendly forces and which require detailed integration of each air mission with the fire and movement of those forces. Also called **CAS**. (Joint Pub 1-02)

combined arms—The full integration of combat arms in such a way that to counteract one, the enemy must become more vulnerable to another. (MCRP 5-12C)

communications intelligence—See electronic warfare.

concept of operations—A verbal or graphic statement, in broad outline, of a commander's assumptions or intent in regard to an operation or series of operations. The concept of operations frequently is embodied in campaign plans and operation plans; in the latter case, particularly when the plans cover a series of connected operations to be carried out simultaneously or in succession. The concept is designed to give an overall picture of the operation. It is included primarily for additional clarity of purpose. Also called commander's concept. (Joint Pub 1-02)

counterinsurgency—Those military, paramilitary, political, economic, psychological, and civic actions taken by a government to defeat insurgency. (Joint Pub 1-02)

D

deception—Those measures designed to mislead the enemy by manipulation, distortion, or falsification of evidence to induce him to react in a manner prejudicial to his interests. (Joint Pub 1-02)

deep air support—Air action against enemy targets at such a distance from friendly forces that detailed integration of each mission with fire and movement of friendly forces is not required. Deep air support missions are flown on either side of the fire support coordination line; the lack of a requirement for close coordination with the fire and movement of friendly forces is the qualifying factor. (MCRP 5-12C)

demonstration—An attack or show of force on a front where a decision is not sought, made with the aim of deceiving the enemy. (Joint Pub 1-02)

direct air support center—The principal air control agency of the US Marine air command and control system responsible for the direction and control of air operations directly supporting the ground combat element. It processes and coordinates requests for immediate air support and coordinates air missions requiring integration with ground forces and other supporting arms. It normally collocates with the senior fire support coordination center within the ground combat element and is subordinate to the tactical air command center. Also called **DASC**. (Joint Pub 1-02)

direct support—A mission requiring a force to support another specific force and authorizing it to answer directly the supported force's request for assistance. (Joint Pub 1-02)

E

electronic warfare—Any military action involving the use of electromagnetic and directed energy to control the electro-magnetic spectrum or to attack the enemy. Also called **EW**. The three major subdivisions within electronic warfare are: electronic attack, electronic protection, and electronic warfare support.

a. electronic attack—That division of electronic warfare involving the use of electromagnetic, directed energy, or antiradiation weapons to attack personnel, facilities, or equipment with the intent of degrading, neutralizing, or destroying enemy combat capability. Also called **EA**. EA includes: **1)** actions taken to prevent or reduce an enemy's effective use of the electromagnetic spectrum, such as jamming and electromagnetic deception, and **2)** employment of weapons that use either electromagnetic or directed energy as their prima-

ry destructive mechanism (lasers, radio frequency weapons, particle beams), or antiradiation weapons.

b. electronic protection—That division of electronic warfare involving actions taken to protect personnel, facilities, and equipment from any effects of friendly or enemy employment of electronic warfare that degrade, neutralize, or destroy friendly combat capability. Also called **EP**.

c. electronic warfare support—That division of electronic warfare involving actions tasked by, or under direct control of, an operational commander to search for, intercept, identify, and locate sources of intentional and unintentional radiated electromagnetic energy for the purpose of immediate threat recognition. Thus, electronic warfare support provides information required for immediate decisions involving electronic warfare operations and other tactical actions such as threat avoidance, targeting, and homing. Also called **ES**. Electronic warfare support data can be used to produce signals intelligence (SIGINT), both communications intelligence (COMINT), and electronic intelligence (ELINT). (Joint Pub 1-02)

F

feint—A limited-objective attack involving contact with the enemy, varying in size from a raid to a supporting attack. Feints are used to cause the enemy to react in three predictable ways: to employ reserves improperly, to shift supporting fires, or to reveal defensive fires. (MCRP 5-12C)

final protective fire—An immediately available prearranged barrier of fire designed to impede enemy movement across defensive lines or areas. (Joint Pub 1-02)

fire support—In Marine Corps usage, assistance to elements of the Marine air-ground task force engaged with the enemy rendered by other firing units, including (but not limited to) artillery, mortars, naval surface fire support, and offensive air support. (MCRP 5-12C)

fire support coordination center—A single location in which are centralized communications facilities and personnel incident to the coordination of all forms of fire support. (Joint Pub 1-02)

fire support coordination line—A fire support coordination measure that is established and adjusted by appropriate land or amphibious force commanders within their boundaries in consultation with superior, subordinate, supporting, and affected commanders. Fire support coordination lines (FSCLs) facilitate the expeditious attack of surface targets of opportunity beyond the coordinating measure. An FSCL does not divide an area of operations by defining a boundary between close and deep operations or a zone for close air support. The FSCL applies to all fires of air, land, and sea-based weapon systems using any type of ammunition. Forces attacking targets beyond an FSCL must inform all affected commanders in sufficient time to allow necessary reaction to avoid fratricide. Supporting elements attacking targets beyond the FSCL must ensure that the attack will not produce adverse effects on, or to the rear of, the line. Short of an FSCL, all air-to-ground and surface-to-surface attack operations are controlled by the appropriate land or amphibious force commander. The FSCL should follow well defined terrain features. Coordination of attacks beyond the FSCL is especially critical to commanders of air, land, and special operations forces. In exceptional circumstances, the inability to conduct this coordination will not preclude the attack of targets beyond the FSCL. However, failure to do so may increase the risk of fratricide and could waste limited resources. Also called **FSCL**. (Joint Pub 1-02)

forward air controller—An officer (aviator/pilot) member of the tactical air control party who, from a forward ground or airborne position, controls aircraft in close air support of ground troops. (Joint Pub 1-02)

forward air controller (airborne)—A specifically trained and qualified aviation officer who exercises control from the air of aircraft engaged in close air support of ground troops. The forward air controller (airborne) is normally an airborne

extension of the tactical air control party. Also called **FAC(A)**. (Joint Pub 1-02)

forward arming and refueling point—A temporary facility, organized, equipped, and deployed by an aviation commander, and normally located in the main battle area closer to the area of operation than the aviation unit's combat service area, to provide fuel and ammunition necessary for the employment of aviation maneuver units in combat. The forward arming and refueling point permits combat aircraft to rapidly refuel and rearm simultaneously. Also called **FARP**. (Joint Pub 1-02)

forward looking infrared—An airborne, electro-optical thermal imaging device that detects far-infrared energy, converts the energy into an electronic signal, and provides a visible image for day or night viewing. Also called **FLIR**. (Joint Pub 1-02)

forward operating base—An airfield used to support tactical operations without establishing full support facilities. The base may be used for an extended time period. Support by a main operating base will be required to provide backup support for a forward operating base. Also called **FOB**. (Joint Pub 1-02)

G

general support—That support which is given to the supported force as a whole and not to any particular subdivision thereof. (Joint Pub 1-02)

H

helicopter support team—A task organization formed and equipped for employment in a landing zone to facilitate the landing and movement of helicopterborne troops, equipment and supplies, and to evacuate selected casualties and enemy prisoners of war. (Joint Pub 1-02). Within the Marine Corps, helicopter support teams are sourced from the FSSG, specifically from the Landing Support Company of the Support Battalion. Also called **HST**.

I

immediate air support—Air support to meet specific requests which arise during the course of a battle and which by their nature cannot be planned in advance. (Joint Pub 1-02)

M

maneuver warfare—A warfighting philosophy that seeks to shatter the enemy's cohesion through a variety of rapid, focused, and unexpected actions which create a turbulent and rapidly deteriorating situation with which the enemy cannot cope. (MCRP 5-12C)

Marine air command and control system—A system which provides the aviation combat element commander with the means to command, coordinate, and control all air operations within an assigned sector and to coordinate air operations with other Services. It is composed of command and control agencies with communications-electronics equipment that incorporates a capability from manual through semiautomatic control. Also called **MACCS**. (Joint Pub 1-02)

Marine air-ground task force—The Marine Corps principal organization for all missions across the range of military operations, composed of forces task-organized under a single commander capable of responding rapidly to a contingency anywhere in the world. The types of forces in the MAGTF are functionally grouped into four core elements: a command element, an aviation combat element, a ground combat element, and a combat service support element. The four core elements are categories of forces, not formal commands. The basic structure of the Marine air-ground task force never varies, though the number, size, and type of Marine Corps units comprising each of its four elements will always be mission dependent. The flexibility of the organizational structure allows for one or more subordinate MAGTFs, other Service and/or foreign military forces, to be assigned or attached. Also called **MAGTF**. See also aviation combat element; combat service support element;

command element; ground combat element; Marine expeditionary force; Marine expeditionary force (Forward); Marine expeditionary unit; special purpose Marine air-ground task force. **command element**—The core element of a Marine air-ground task force that is the headquarters. The command element is composed of the commander, general or executive and special staff sections, headquarters section, and requisite communications support, intelligence and reconnaissance forces, necessary to accomplish the MAGTF's mission. The command element provides command and control, intelligence, and other support essential for effective planning and execution of operations by the other elements of the Marine air-ground task force. The command element varies in size and composition and may contain other Service or foreign military forces assigned or attached to the MAGTF. Also called **CE**. See also aviation combat element; combat service support element; ground combat element; Marine air-ground task force; Marine expeditionary force; Marine expeditionary force (Forward); Marine expeditionary unit; special purpose Marine air-ground task force. **aviation combat element**—The core element of a Marine air-ground task force that is task-organized to conduct aviation operations. The aviation combat element provides all or a portion of the six functions of Marine aviation necessary to accomplish the Marine air-ground task force's mission. These functions are antiair warfare, offensive air support, assault support, electronic warfare, air reconnaissance, and control of aircraft and missiles. The aviation combat element is usually composed of an aviation unit headquarters and various other aviation units or their detachments. It can vary in size from a small aviation detachment of specifically required aircraft to one or more Marine aircraft wings. The aviation combat element may contain other Service or foreign military forces assigned or attached to the Marine air-ground task force. The aviation combat element itself is not a formal command. Also called **ACE**. See also combat service support element; command element; ground combat element; Marine air-ground task force; Marine expeditionary force; Marine expeditionary force (Forward); Marine expeditionary unit; special purpose Marine air-ground task force. **ground combat element**—The core element of a Marine air-ground task force that is task-organized to conduct ground operations. It is usually constructed around an infantry organization but can vary in size from a small ground unit of any type, to one or more Marine divisions that can be independently maneuvered under the direction of the MAGTF commander. It includes appropriate ground combat and combat support forces and may contain other Service or foreign military forces assigned or attached to the Marine air-ground task force. The ground combat element itself is not a formal command. Also called **GCE**. See also aviation combat element; combat service support element; command element; Marine air-ground task force; Marine expeditionary force; Marine expeditionary force (Forward); Marine expeditionary unit; special purpose Marine air-ground task force. **combat service support element**—The core element of a Marine air-ground task force that is task-organized to provide the combat service support necessary to accomplish the Marine air-ground task force mission. The combat service support element varies in size from a small detachment to one or more force service support groups. It provides supply, maintenance, transportation, general engineering, health services, and a variety of other services to the Marine air-ground task force. It may also contain other Service or foreign military forces assigned or attached to the MAGTF. The combat service support element itself is not a formal command. Also called **CSSE**. See also aviation combat element; command element; ground combat element; Marine air-ground task force; Marine expeditionary force; Marine expeditionary force (Forward); Marine expeditionary unit; special purpose Marine air-ground task force. **special purpose Marine air-ground task force**—A Marine air-ground task force organized, trained and equipped with narrowly focused capabilities. It is designed to accomplish a specific mission, often of limited scope and duration. It may be any size, but normally it is a relatively small force—the size of a Marine expeditionary unit or smaller. It may contain other Service or foreign military forces assigned or attached to the Marine air-ground task force. Also called **SPMAGTF**. See also aviation combat element; combat service support element; command

element; ground combat element; Marine air-ground task force; Marine expeditionary force; Marine expeditionary force (Forward); Marine expeditionary unit. **Marine expeditionary unit**—A Marine air-ground task force that is constructed around an infantry battalion reinforced, a helicopter squadron reinforced, and a task-organized combat service support element. It normally fulfills Marine Corps forward sea-based deployment requirements. The Marine expeditionary unit provides an immediate reaction capability for crisis response and is capable of limited combat operations. It may contain other Service or foreign military forces assigned or attached. Also called **MEU**. See also aviation combat element; combat service support element; command element; ground combat element; Marine air-ground task force; Marine expeditionary force; Marine expeditionary force (Forward); Marine expeditionary unit (special operations capable); special purpose Marine air-ground task force. **Marine expeditionary unit (special operations capable)**— The Marine Corps standard, forward-deployed, sea-based expeditionary organization. The MEU(SOC) is a MEU, augmented with selected personnel and equipment, that is trained and equipped with an enhanced capability to conduct amphibious operations and a variety of specialized missions of limited scope and duration. These missions include specialized demolition, clandestine reconnaissance and surveillance, raids, in-extremis hostage recovery, and enabling operations for follow-on forces. The Marine expeditionary unit (special operations capable) is not a special operations force but, when directed by the National Command Authorities, the combatant commander in chief, and/or other operational commander, may conduct limited special operations in extremis, when other forces are inappropriate or unavailable. It may also contain other Service or foreign military forces assigned or attached to the Marine air-ground task force. Also called **MEU (SOC)**. See also aviation combat element; combat service support element; command element; ground combat element; Marine air-ground task force; Marine expeditionary force; Marine expeditionary force (Forward); Marine expeditionary unit; special purpose Marine air-ground task force. **Marine expeditionary force**—The largest Marine air-ground task force and the Marine Corps principal warfighting organization, particularly for larger crises or contingencies. It is task-organized around a permanent command element and normally contains one or more Marine divisions, Marine aircraft wings, and Marine force service support groups. The Marine expeditionary force is capable of missions across the range of military operations, including amphibious assault and sustained operations ashore in any environment. It can operate from a sea base, a land base, or both. It may also contain other Service or foreign military forces assigned or attached to the MAGTF. Also called **MEF**. See also aviation combat element; combat service support element; command element; ground combat element; Marine air-ground task force; Marine expeditionary force (Forward); Marine expeditionary unit; special purpose Marine air-ground task force. **Marine expeditionary force (Forward)**—A designated lead echelon of a Marine expeditionary force, task-organized to meet the requirements of a specific situation. A Marine expeditionary force (Forward) varies in size and composition, and may be commanded by the Marine expeditionary force commander personally or by another designated commander. It may be tasked with preparing for the subsequent arrival of the rest of the MEF/joint/combined forces, and/or the conduct of other specified tasks, at the discretion of the MEF commander. A Marine expeditionary force (Forward) may also be a stand-alone MAGTF, task-organized for a mission in which a MEF is not required. It may also contain other Service or foreign military forces assigned or attached to the Marine air-ground task force. Also called **MEF (Forward)**. See also aviation combat element; combat service support element; command element; ground combat element; Marine air-ground task force; Marine expeditionary force; Marine expeditionary unit; Marine expeditionary unit (special operations capable); special purpose Marine air-ground task force. **air contingency MAGTF**—An on-call, combat-ready MAGTF that deploys by airlift. Air contingency MAGTFs vary in size based on mission requirements and the availability of airlift. Because they deploy by air, they generally have a limited organic logistic capability, and require an arrival airfield. Air contingency MAGTFs usually are activated to

respond to developing crises, and may deploy independently or in conjunction with other expeditionary forces. Also called **ACM**. See also aviation combat element; combat service support element; ground combat element; Marine air-ground task force; Marine expeditionary force; Marine expeditionary force (Forward); Marine expeditionary unit; special purpose Marine air-ground task force; task force. (Proposed change to Joint Pub 1-02)

O

offensive air support—Those air operations conducted against enemy installations, facilities, and personnel to directly assist the attainment of MAGTF objectives by the destruction of enemy resources or the isolation of the enemy's military forces. Also called **OAS**. (MCRP 5-12C)

operations security—A process of identifying critical information and subsequently analyzing friendly actions attendant to military operations and other activities to:

a. Identify those actions that can be observed by adversary intelligence systems.

b. Determine indicators hostile intelligence systems might obtain that could be interpreted or pieced together to derive critical information in time to be useful to adversaries.

c. Select and execute measures that eliminate or reduce to an acceptable level the vulnerabilities of friendly actions to adversary exploitation. Also called **OPSEC**. (Joint Pub 1-02)

P

preplanned air support—Air support in accordance with a program, planned in advance of operations. (Joint Pub 1-02)

R

raid—An operation, usually small scale, involving a swift penetration of hostile territory to secure information, confuse the enemy, or to destroy installations. It ends with a planned withdrawal upon completion of the assigned mission. (Joint Pub 1-02)

rear area operations center/rear tactical operations center—A command and control facility that serves as an area/subarea commander's planning, coordinating, monitoring, advising, and directing agency for area security operations. (Joint Pub 1-02)

rear area security—The measures taken before, during, and/or after an enemy airborne attack, sabotage action, infiltration, guerrilla action, and/or initiation of psychological or propaganda warfare to minimize the effects thereof. (MCRP 5-12C)

r**ules of engagement**—Directives issued by competent military authority which delineate the circumstances and limitations under which United States forces will initiate and/or continue combat engagement with other forces encountered. Also called **ROE**. (Joint Pub 1-02)

S

special operations—Operations conducted by specially organized, trained, and equipped military and paramilitary forces to achieve military, political, economic, or informational objectives by unconventional military means in hostile, denied, or politically sensitive areas. These operations are conducted across the full range of military operations, independently or in coordination with operations of conventional, nonspecial operations forces. Political-military considerations frequently shape special operations, requiring clandestine, covert, or low visibility techniques and oversight at the national level. Special operations differ from conventional operations in degree of physical and political risk, operational techniques, mode of employment, independence from friendly support, and dependence on detailed operational intelligence and indigenous assets. Also called **SO**. (Joint Pub 1-02)

suppression of enemy air defenses—That activity which neutralizes, destroys, or temporarily degrades surface-based enemy air defenses by

destructive and/or disruptive means. Also called **SEAD**. (Joint Pub 1-02)

surface-to-air weapon—A surface-launched weapon for use against airborne targets. Future developments in air defense systems may lead to the employment of weapons other than missiles. Examples include rockets, directed-energy weapons, and air defense guns. (Joint Pub 1-02)

T

tactical air command center—The principal US Marine Corps air command and control agency from which air operations and air defense warning functions are directed. It is the senior agency of the U. S. Marine air command and control system which serves as the operational command post of the aviation combat element commander. It provides the facility from which the aviation combat element commander and his battle staff plan, supervise, coordinate, and execute all current and future air operations in support of the Marine air-ground task force. The tactical air command center can provide integration, coordination, and direction of joint and combined air operations. Also called **Marine TACC**. (Joint Pub 1-02)

tactical air control center—The principal air operations installation (ship-based) from which all aircraft and air warning functions of tactical air operations are controlled. Also called **Navy TACC**. (Joint Pub 1-02)

tactical air control party—A subordinate operational component of a tactical air control system designed to provide air liaison to land forces and for the control of aircraft. (Joint Pub 1-02)

tactical air coordinator (airborne)—An officer who coordinates, from an aircraft, the action of combat aircraft engaged in close support of ground or sea forces. (Joint Pub 1-02)

tactical air direction center—An air operations installation under the overall control of the tactical air control center (afloat)/tactical air command center, from which aircraft and air warning service functions of tactical air operations in an area of responsibility are directed. (Joint Pub 1-02)

tactical air operation—An air operation involving the employment of air power in coordination with ground or naval forces to:

a. gain and maintain air superiority;

b. prevent movement of enemy forces into and within the objective area and to seek out and destroy these forces and their supporting installations;

c. join with ground or naval forces in operations within the objective area, in order to assist directly in attainment of their immediate objective. (Joint Pub 1-02)

tactical air operations center—The principal air control agency of the US Marine air command and control system responsible for airspace control and management. It provides real time surveillance, direction, positive control, and navigational assistance for friendly aircraft. It performs real time direction and control of all antiair warfare operations, to include manned interceptors and surface-to-air weapons. It is subordinate to the tactical air command center. Also called **TAOC**. (Joint Pub 1-02)

tactical recovery of aircraft and personnel—A mission performed by an assigned and briefed aircrew for the specific purpose of the recovery of personnel, equipment, and/or aircraft when the tactical situation precludes search and rescue (SAR) assets from responding and when survivors and their location have been confirmed. Also called **TRAP**. (MCRP 5-12C)

time on station—The time that an aircraft can actually spend performing its assigned mission. It does not include the time transiting to and from the operating site. Also called **TOS**. (MCRP 5-12C)

Appendix D

References and Related Publications

Joint Publications (Joint Pubs)

0-2	Unified Action Armed Forces (UNAAF)
1-02	DOD Dictionary of Military and Associated Terms
3-0	Doctrine for Joint Operations
3-02	Joint Doctrine for Amphibious Operations
3-07	Joint Doctrine for Military Operations Other Than War
3-52	Doctrine for Joint Airspace Control in a Combat Zone
3-54	Joint Doctrine for Operations Security
3-56.1	Command and Control for Joint Air Operations
3-58	Joint Doctrine for Military Deception
5-0	Doctrine for Planning Joint Operations

Naval Doctrine Publications (NDPs)

1	Naval Warfare
3	Naval Operations (under development)
5	Naval Planning
6	Naval Command and Control

Naval Warfare Publications (NWPs)

3-09.11M	Supporting Arms in Amphibious Operations
3-02.1	Ship-to-Shore Movement

U.S. Army Field Manuals (FMs)

6-20-1	The Field Artillery Cannon Battalion
34-130	Intelligence Preparation of the Battlefield

Marine Corps Orders

3120.9A	Policy for Marine Expeditionary Unit (Special Operations Capable) (MEU(SOC))
3500.17	Training and Readiness Manual, Volume 2

Marine Corps Doctrinal Publications (MCDPs)

1	Warfighting
1-1	Strategy
1-2	Campaigning
1-3	Tactics
2	Intelligence
5	Planning
6	Command and Control

Marine Corps Warfighting Publications (MCWPs)

3-2	Aviation Operations (under development)
3-11.4	Tactical Fundamentals of Helicopterborne Operations (under development)
3-16	Fire Support Coordination (under development)

3-24.1	Shipboard Helicopter Operating Procedures For Air-Capable Ships
3-25	Control of Aircraft and Missiles
3-25.3	Marine Air Command and Control System Handbook
3-25.5	Direct Air Support Center Handbook
3-31.5	Ship-to-Shore Movement
5-1	Marine Corps Planning Process (under development)
6-22	Communications and Information Systems

Fleet Marine Force Manuals (FMFMs)

4-3	MAGTF Landing Support Operations
5-40	Offensive Air Support
5-45	Suppression of Enemy Air Defenses
5-50	Antiair Warfare
5-70	MAGTF Aviation Planning
6-21	Tactical Fundamentals of Helicopterborne Operations
7-22	Tactical Fundamentals for Aviation in Cold Weather Operations
8-2	Counterinsurgency Operations

Fleet Marine Force Reference Publication (FMFRP)

5-71	MAGTF Aviation Planning Documents

Miscellaneous

Concept Paper, Forward. . .From the Sea

Concept Paper, Ship-To-Objective Maneuver

Concept Paper, Operational Maneuver From the Sea